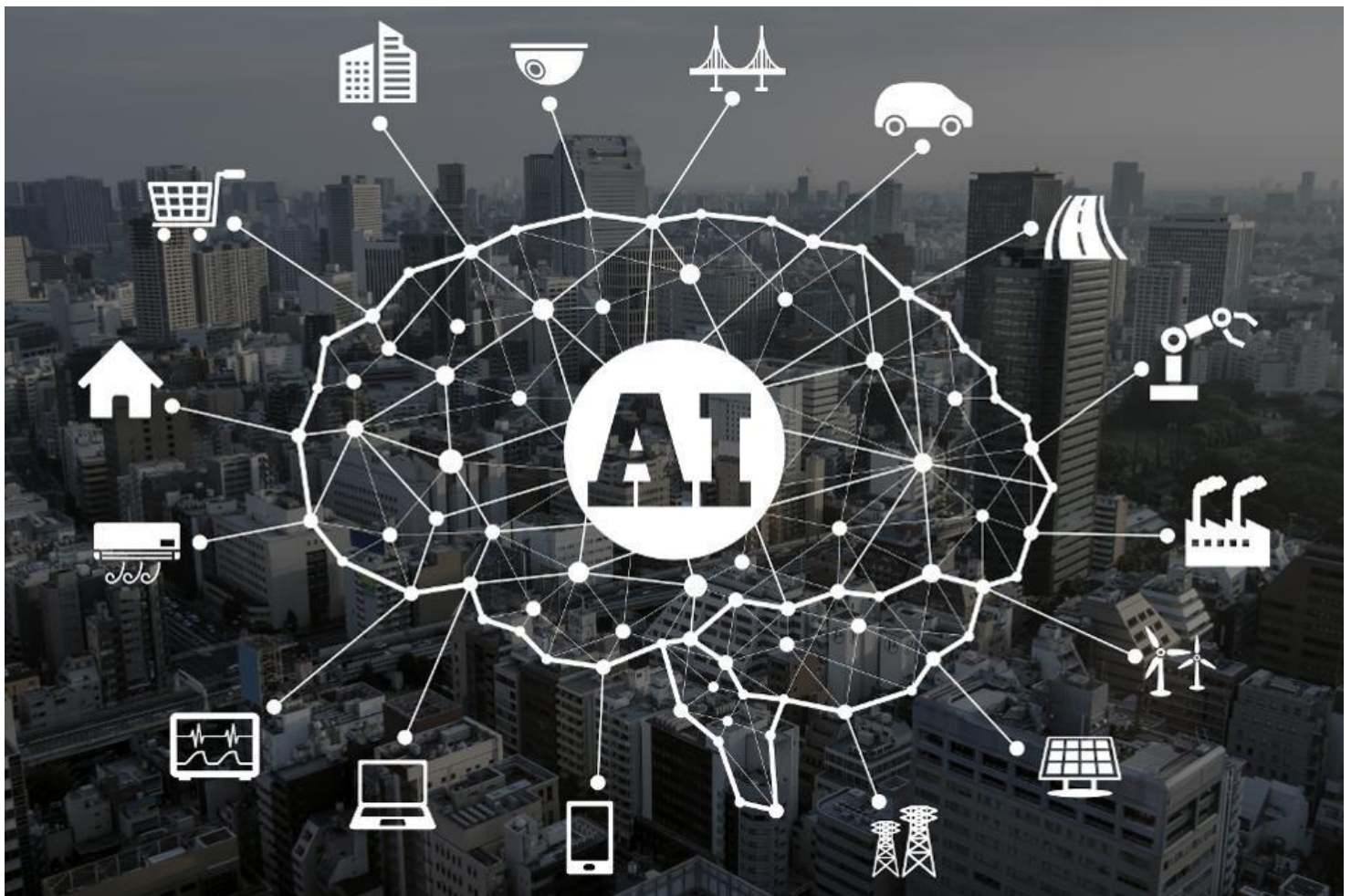


Opportunities for Swiss Companies

AI in Japan



OFFICIAL PROGRAM



PARTNER



AI IN JAPAN OPPORTUNITIES FOR SWISS COMPANIES

Date: January 10, 2019

Language: English

Number of pages: 48

Author: Swiss Business Hub Japan

In cooperation with

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1. Foreword

This report focuses on opportunities for Swiss AI startups and SMEs in the Japanese market.

The Japanese government sees artificial intelligence and robotics as key technologies that will allow Japan to address the challenges of an aging population, a shrinking workforce, and competitive pressure from other countries in the region. Japan's extensive experience and know-how in the development of hardware, and the vast quantities of data generated by the manufacturing sector, have created a favorable environment for the development of AI. However, conservative mindsets, an over-reliance on in-house R&D, and the fact that software still remains a weak area have hampered Japan's advancements in AI.

Fortunately, in recent years open innovation has taken root in Japan, and businesses are increasingly looking to both domestic and foreign companies for new technologies. This trend creates opportunities for Swiss startups and SMEs offering AI technologies.

This report provides an overview of the ecosystem, main players and government initiatives related to artificial intelligence in the Japanese market, and outlines in detail trends and opportunities in manufacturing, autonomous vehicles, digital healthcare, elderly care, financial services, agriculture, energy, security, disaster management and AI assistant sectors.

The report further provides guidance on market entry strategies and useful resources for companies seeking to enter the market. The Swiss Business Hub Japan will be happy to advise you with any additional information you may need.



Claudio Mazzucchelli
Head Swiss Business Hub Japan

Swiss Business Hub Japan
c/o Embassy of Switzerland
Tokyo

Mail claudio.mazzucchelli@eda.admin.ch
Phone +41 58 480 0128
s-ge.com

2. An Introduction to AI in Japan

Japan has been active in research and development in the AI space since the term first appeared in the 1950s. Early research focused on computer vision, speech processing, and natural language processing. At the Osaka Expo in 1970, a group from Kyoto University presented the world's first face-recognition system.

During the period 1982-1992 MITI¹ invested over USD 400 million in the Fifth Generation Computer Project (FGCP) aiming to take computer processing to a new level and improve artificial intelligence, ultimately creating machines that could accept spoken commands, translate languages, interpret pictures, diagnose diseases and serve as financial advisers. The project garnered a lot of attention and birthed a generation of AI researchers, but there was little commercialization and the project was terminated in 1992 without having met its goals.

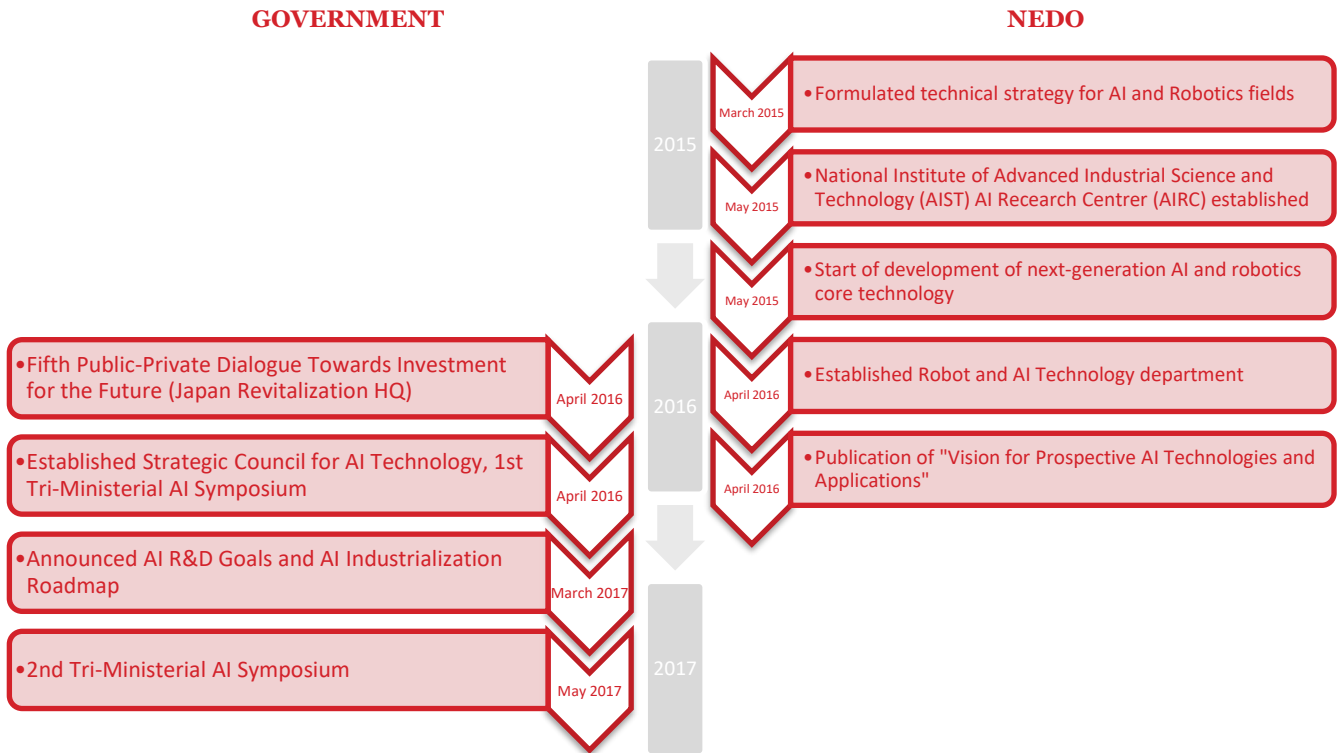
A new wave of interest in AI began in Japan, as it did in other countries, around 2012, when Google and Facebook established AI research laboratories. While Japan still lags the US, Europe and China, the Japanese government is pushing major initiatives to support the development of AI technologies.

In 2016 the Abe administration launched its Japan Revitalization Strategy. The Strategic Council for AI Technology was established by the Ministry of Internal Affairs and Communications (MIC), the Ministry Education, Culture, Sports, Science and Technology (MEXT), and the Ministry of Economy, and Trade and Industry (METI) to promote better cooperation between industry, academia, and government (the New Energy and Industrial Technology Development Organization (NEDO) was assigned a secretariat role). One focus of the strategy is promoting the automation and sophistication of industry by utilizing IoT, Big Data, AI and robotics, to boost productivity and stimulate economic growth. The goal is to raise Japan's GDP to JPY 600 trillion (approx. USD 5.3 trillion) - Japan's GDP in 2017 was JPY 547 trillion (USD 4.872 trillion). It is estimated that IoT, AI, Big Data and robots will create JPY30 trillion (USD 272.7 billion) of added value by 2020.

Figure 1 sets out Japanese government and NEDO activities on AI.

¹ Ministry of International Trade and Industry taken over by the Ministry of Economy, Trade and Industry (METI).in 2001.

Figure 1: Japanese Government and NEDO Activities on AI



The main drivers behind the push for increased use of AI include the rapidly aging population, a shrinking workforce, competitive pressure from other countries and an immigration policy that hinders the replacement of labor with foreign workers.

IDC Research projects the growth of artificial intelligence in Japan at 74% (5-year CAGR) and estimates the market will reach JPY 25 trillion (approx. USD 227 billion) by 2021. The Ernst & Young Institute projects similar estimates: an increase from JPY 3.7 trillion (USD 33.6 billion) in 2015 to JPY 23 trillion (USD 209 billion) in 2020 and to JPY 87 trillion (USD 791 billion) by 2030.

2.1. CHALLENGES FOR JAPAN (OPPORTUNITIES FOR OVERSEAS COMPANIES)

The main challenges facing Japan in the development of AI are:

- A shortage of AI researchers and data scientists
- Japan excels at hardware, but outside of the gaming industry, lags in software development
- Insufficient investment – Japan’s budget for artificial intelligence is only 20% of the US and China
- Data for deep learning – Japan has large amounts of data, but it is often siloed and/or not digitized
- Restrictions on the use of personal data - the laws relating to the handling of personal information are extremely strict

3. The AI Industry in Japan

This chapter focuses on the trends in the market and provides examples of major large Japanese companies working in AI and AI startups.

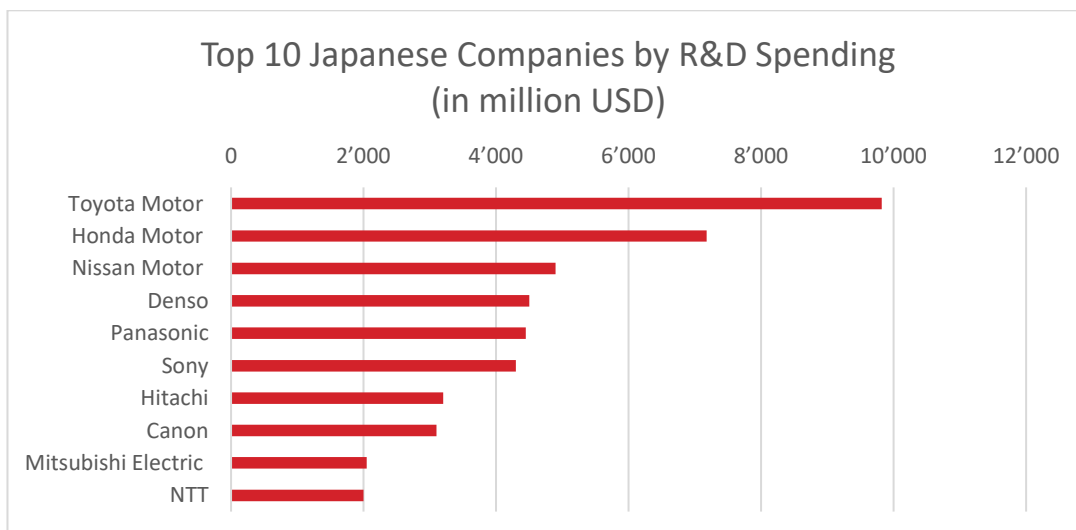
3.1. AI ECOSYSTEM AND KEY PLAYERS

AI used to be the domain of tier-one corporations like Sony, which developed solutions in-house. However, the current trend is for large corporations with data to collaborate with startups (and universities) that are developing AI algorithms.

Collaboration between large Japanese companies and AI startups is still in its nascent stage and has been predominantly limited to Japanese startups (the earliest collaboration with prominent Japanese startup Preferred Networks is only four years old). There is an understanding that engaging with foreign AI startups is necessary/beneficial, but Japan has been slow to adapt to this trend. Intense competition means that hot AI startups generally get acquired by FAANG companies (Facebook, Amazon, Apple, Netflix and Google). Further there are geographical, linguistic and cultural challenges for Japan in dealing with foreign startups. And not all AI technologies are immediately applicable due to the lack of appropriate data.

However, the ecosystem is changing and opportunities for foreign startups are increasing. The traditional NIH (“not invented here”) mindset is giving way to OI (open innovation), with a large number of leading companies launching initiatives to attract domestic and foreign startups. Corporate R&D spending is also increasing. According to the Nikkei Inc. FY2018 survey of R&D activities, 43.9% of the 231 major companies that participated in the survey reported their highest R&D budgets ever, a 4.5% increase on the previous year. Figure 2 sets out the top ten Japanese companies by R&D spend (on autonomous driving, electric vehicles, AI, batteries, image sensors, IoT, robotics, healthcare, and energy saving).

Figure 2: Top 10 Japanese Companies by R&D Spending FY2018



Source: Nikkei Inc.

3.1.1. Large companies

- **NEC** - multinational provider of IT services and products, FY2017 revenues JPY2,844.4 billion (USD25.9 billion), 109,390 employees. NEC has been involved in AI research since the 1970s and plans to have 1000 staff working on AI by 2020. NEC's AI technology is centered on visualization, analysis, and prescription, with applications in public safety, disaster prevention,

human resources and quality control. NEC has developed immigration systems which use facial recognition technology (most accurate in the world), plant failure prediction systems, building energy management systems, and retail order placement systems. NEC is also working on water management innovations, a Safer Cities project (which aims to prevent accidents and crimes by detecting suspicious behavior), and cyber security, which detects undiscovered attacks. NEC's portfolio of AI technologies is marketed under the brand NEC the WISE. Partners include Japan Weather Association (demand forecasting), Tokyo Institute of Technology (image clarity enhancement), dotData and SMBC Group (automated data science processes).

- **NTT Group** - one of the world's largest ICT companies, FY2017 revenues JPY11,799.6 billion (USD107 billion), 282,550 employees. Comprised of NTT East (fixed line), NTT West (fixed line), NTT Docomo (mobile), NTT Data (data communications), and NTT Communications (long distance and international communications). Under the brand name "Corevo" NTT Group is promoting collaboration with partners on AI-related technologies the group develops, focusing on the manufacturing, automotive, and medical care sectors. Strengths include Japanese language analysis and speech and acoustics processing. The NTT Group is also open to outside technology – for example, utilizing Preferred Networks big data-based deep learning technology. NTT Communications created the "Takumi Eyes²" solution using deep learning that can automatically detect a specific person from recorded video. In May 2018 NTT Docomo launched an AI assistant service called "my daiz³".
- **Toshiba** - multinational conglomerate, FY2017 revenues JPY3,947.6 billion (USD35.9 billion), 141,256 employees. Toshiba has been developing AI since it demonstrated a world-first letter sorting machine in 1967. Core AI technologies include speech and image recognition, speech synthesis, translation, dialogue and understanding of intentions. Toshiba's AI based analytics system "SATLYS" uses advanced image analysis technologies and deep learning technologies are used on signals and image data obtained from equipment in factory production lines to identify product defects, predict impending equipment problems, and automate and optimize equipment control. Toshiba's RECAIUS AI is providing component products and cloud services for human interface systems including speech recognition and synthesis, intent comprehension, dialogue response, knowledge retrieval, and person identification. Toshiba aims to leverage its experience in developing power generators and control equipment to improve the efficiency of power plant operation. Toshiba's image recognition LSI for automotive applications can process image data with high accuracy and is supporting the realization of driverless vehicles.
- **Sharp Corporation** - manufacturing and sales of telecommunications equipment, electric and electronic application equipment, and electronic components, FY2017 revenues JPY2,427.3 billion (USD22 billion), 51,734 employees. Sharp's focus is on making appliances and devices people-oriented and user-friendly by connecting them to the cloud and giving them AI capabilities. Sharp's vision rests on AIoT, a term coined to reflect the firm's unique synthesis of AI and IoT. Sharp's COCORO+ series of AIoT devices already includes unique products like the COCORO Kitchen range. Sharp deployed AI technology in the camera of the new AQUOS R2⁴, which uses AI-assisted image and facial expression recognition to automatically take the best shot. Sharp announced a joint project with MK Co.⁵ (Kyoto-based taxi operator) and JTB (leading travel agency), where Sharp's small humanoid robot RoBoHon will provide sightseeing guidance in Japanese, Chinese and English for tourists taking taxis.
- **Hitachi** - multinational conglomerate, revenues JPY9,368.6 billion (USD 85.17 billion), 307,275 employees. Developed AI program that enables robots to analyze big data and working routines and deliver instructions to employees. Hitachi worked with the University of Edinburgh to develop a multiple AI coordination control technology that integrates the control of picking robots and automated guided vehicles (AGV) to smoothly pick up specified products from goods carried by AGVs. Hitachi has collaborated with shipping company Stena Line to develop an AI model that can help vessels to reduce fuel consumption.
- **Sony** - mobile communications, gaming, consumer electronics, insurance, revenues JPY8,544 billion (USD77.67 billion), 117,300 employees. Sony has developed an electric vehicle driven remotely by passengers through an on-board panel. It uses advanced sensor technology to capture a 360-degree image of its surroundings and can distinguish age/sex and show demographic-specific advertisements. A prototype is being tested at the Okinawa Institute of Science and Technology Graduate University. Sony invested in California startup Cogitai in 2016 – Cogitai is developing systems that learn through interaction with the world

² https://www.ntt.com/about-us/press-releases/news/article/2017/0712.html?link_id=products_nttcom_010 (Japanese only)

³ <https://www.mydaiz.jp/navi/index.html> (Japanese only)

⁴ <http://www.sharp.co.jp/k-tai/aquos-r2/camera/> (Japanese only)

⁵ <http://www.mk-group.co.jp/travel/robotabixi/> (Japanese only)

- **DeNA** - mobile and online services including games, e-commerce and entertainment, FY2017 revenues JPY139,390 million (USD1,267 million), 2,475 employees. Using AI, DeNA has developed "animation generation technology" that generates the images and motion of animated characters⁶. DeNA is also collaborating with Preferred Networks in the genomics space.
- **Toyota** - automotive OEM, revenues JPY 27,597 billion (USD 255.5 billion), 369,124 employees. In 2016 Toyota established Toyota Research Institute - an R&D company focusing on AI and robotics - in Silicon Valley to attract talent and access technology. Toyota is investing USD50 million to develop AI research centers at Stanford and MIT. Together with Japan Taxi, KDDI and Accenture, Toyota developed an AI-assisted taxi dispatch system. Another project involved using data gathered together with Times Car Share to improve driving efficiency through AI. Toyota announced it would spend USD 1 billion over the period 2015-2020 in a joint research project with Preferred Networks, focusing on connecting vehicles. Toyota, NEC and RIKEN are working together to develop systems that use sensor data to predict production machinery failure.
- **Fujitsu** - one of the largest ICT providers in Japan, revenues JPY 4,098.3 billion (USD 37.26 billion), 140,365 employees. Active in AI since the 1980s. In the lead up to the 2020 Tokyo Olympics Fujitsu has been working on an AI-powered robot that guides tourists and announces campaigns at convenience stores. Fujitsu is working with 7-Eleven on the development of X-Stores – unattended convenience stores. Fujitsu has developed software that recognizes emotion in facial expressions.
- **Softbank** - third largest mobile communications provider, revenues JPY9,159 billion (USD86.208 billion), 74,952 employees. Via its Vision Fund, Softbank has invested in a number of AI companies covering a wide range of sectors. Projects include autonomous public transportation with Mitsubishi Estate, partnership with Toyota on autonomous driving, an alliance with IBM to introduce AI Watson system in Japan, and partnership with AKA LLC to introduce the social AI robot "Musio" to Japan. In 2016 Softbank entered into a JV with US Cybereason to provide an AI based cyber-security platform and in 2017 invested an additional USD 100 million.
- **Fanuc** - one of the largest makers of industrial robots in the world, revenue JPY726,596 million (USD6,855 million), 5,469 employees. Working with Japan startup Preferred Networks to develop FIELD system platform to connects robots, devices and sensors, investing JPY 700 million.
- **Fast Retailing** - largest Japanese apparel retailer, owner of "Uniqlo" brand, revenue JPY2,130 billion (USD 19.364 billion), 52,839 employees. Fast Retailing replaced 90% of staff at its warehouse in Ariake, Tokyo with an automated system developed in partnership with [Daifuku](#), a leading material handling system provider. AI camera monitoring systems allow the warehouse to operate 24 hours a day. Fast Retailing is planning a further investment of 100 billion JPY (approximately USD 887 million) to automate other warehouses in Japan and overseas.

3.1.2. Startups

- **Leapmind** – energy-efficient deep learning on edge. Leapmind aims to accelerate the development of Deep Learning of Things (DoT) by introducing compact and energy efficient embedded deep learning solutions. It has created a solution running deep learning at the edge in low-energy computing environments as small as an FPGA. Currently being used by Intel, KDDI, Fujitsu, NTT Data, Dentsu Isobar, Koito Manufacturing, SIGMAXYZ, Sumitomo Mitsui Construction, Dai Nippon Printing, Hakuholdo, GfK Japan.
- **Abeja** - business solutions using deep learning. Abeja has been working with Musashi Seimitsu Industry on the automation of product quality control and Chubu Electric Power Company on electricity consumption analysis.
- **GA Technologies** offers an application for searching, managing and investing in real estate.
- **Preferred Networks**. Spun out of Preferred Infrastructure in 2014. Deep learning technology with a focus on IoT. Preferred Networks also promotes Edge Heavy Computing as a way to address the large amount of data generated by devices. Main business domains include transportation, manufacturing and bio/healthcare. Various projects: Toyota for autonomous driving (USD 110 million in investment), Fanuc for robots, and Panasonic for automotive and audio-visual products. Preferred Networks announced in October 2018 that it is working on an all-purpose household robot to be available within five years⁷ Established [PNDDeNA](#) with smartphone game company DeNA, to develop AI technology.
- **HEROZ** – originally a technology applying machine and deep learning to develop AI for chess, shogi, go and backgammon, now expanding the applications to a variety of industries working with such companies as Nomura Securities, Honda Motor, and Takenaka.

⁶ <https://www.wsj.com/articles/nintendo-partner-dena-links-up-with-artificial-intelligence-company-1468488482>

⁷ <https://asia.nikkei.com/Business/Startups/Japanese-unicorn-promises-robots-for-everyone-in-5-years>: <https://www.preferred-networks.jp/en/news/pr20181015>

- **Molcure** offers a high-performance antibody drug development platform "Abtrace", which can be used by pharmaceutical companies looking to achieve high-efficiency and high-speed screening for drug discovery.
- **Nextremer** offers an automated communication system "Minarai", that uses natural language processing and can be used in online chatbots or robot guides at retail stores. It also has an "A.I. Galleria" system that uses image recognition to identify people and adjust the topic of the conversation.

3.1.3. Foreign players

- ZenRobotics, a Finnish developer of AI controlled robotics systems, has appointed Yokohama-based Sun Earth as its distributor in Japan.
- In 2015 IBM partnered with Softbank to introduce IBM Watson to Japan, and in 2016 a Japanese language version was released.
- Israeli company YouAppi develops AI-based mobile customer acquisition – working with Bandai Namco
- Falconry – a US company offering operational machine learning systems partnered with SCSK (large systems integrator) to market the solution in Japan
- Nauto – the in-vehicle cameras of the US startup is being deployed in vehicles Orix (auto leasing company) leases to corporate customers
- DeepTek – the US startup technology was chosen by NTT Data (the largest systems integrator) for its diagnostic support platform

4. Government Investment Initiatives

This chapter focuses on subsidies and government programs foreign startups looking to enter the Japanese market can benefit from and outlines government activities related to AI legislation.

4.1. GOVERNMENT PROGRAMS

In the fiscal 2018 budget METI earmarked JPY 39.3 billion (USD 357.3 million) for developing robot related technologies and AI chips for next generation computers. MLWH set aside JPY 19.6 billion (USD 178.2 million) for AI in medical data management and pharmaceutical research.

4.1.1. Companies registered in Japan

There are three main types of subsidies offered for AI development. A foreign company can qualify for the program if it has a registered subsidiary in Japan.

AI System Joint Development Support (NEDO)

- Venture companies involved in IoT, Big Data, Artificial Intelligence and robotics performing joint research in the fields of mobility/autonomous driving, robotics/manufacturing, bio/materials, plant/infrastructure safety, smart life
- Budget: JPY 2.4 billion (USD 21.82 million)

A program supporting SME innovation in manufacturing (METI)

- Each company can receive up to JPY 30 million (USD 272,272) in the first year

“I-Challenge!” program supporting ICT innovation (MIC)

- Each company can receive up to JPY 70 million (USD 636,364) in the first year

4.1.2. Foreign companies seeking to enter Japan

In addition, there are a number of incentive programs offered by the national government that are available to foreign companies looking to enter the market regardless of the technology (the full list can be accessed [here](#))

- (1) Investment related incentives
- (2) Tax incentives
- (3) Immigration treatment

Local prefectural governments offer their own subsidies and innovation programs. For example, **Fukuoka City** is a designated Startup National Strategic Special Zone. The city offers a number of [programs](#) specifically for startups looking to set up in the Fukuoka:

- (1) Financial assistance - startup funding or step-up subsidy
- (2) Matching services with venture capital
- (3) Business consultations
- (4) National tax reductions
- (5) Financial aid for office space rental
- (6) Startup visas

In 2017 the Tokyo Metropolitan Government introduced “Accelerator Program – [Tech Business Camp Tokyo](#)” in order to attract foreign startups with cutting-edge technologies.

4.2. AI-RELATED LEGISLATION

There are no regulatory barriers specific to artificial intelligence technologies, however particular sectors may have regulations that apply to AI technologies, for example software that has a diagnostic function will be classified as a medical device and be subject by approval by the Pharmaceuticals and Medical Devices Agency.

In May 2018 the Japanese Parliament amended the Copyright Act to promote innovative digital and AI services, primarily by removing the ambiguity surrounding the use of copyrighted works for understanding and analysis – feeding raw data into a program to carry out deep learning will not be viewed as a breach of copyright. The Copyright Amendment Bill will come into force on January 1, 2019.

Note that Japan made a suggestion at the G-7 technology meeting in Shikoku in 2016 to establish international rules on R&D in artificial intelligence, “[Draft AI R&D GUIDELINES for International Discussions](#)”.

Whilst not specifically AI related, the regulations regarding the use and sharing of personal data – the Act on the Protection of Personal Information – represents a significant barrier in Japan to implementing AI solutions requiring such data. Fingerprints, facial recognition data, and patient records are just some of the examples of data defined as sensitive and requiring cautious handling.

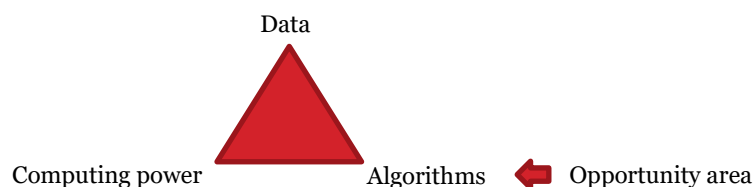
It is important to note that Japan does recognize these challenges and has been making steps to ease the barriers. On July 17, 2018 Japan and the EU agreed to recognize each other's data protection systems as 'equivalent', allowing for free flow of data between the EU and Japan⁸.

⁸ http://europa.eu/rapid/press-release_IP-18-4501_en.htm

5. Opportunity Areas for Swiss Companies

Three forces drive the development of AI - computing power, digital data, and algorithms. Japan's strength lies in manufacturing and hardware development, which has given it both the requisite computing power and reams of data from its massive manufacturing base. However, Japan is much weaker in the area of software development (algorithms) and this is where the opportunities for Swiss companies lie.

Figure 3: Three forces driving AI development in Japan



Contributing factors are a lack of AI researchers and high-profile educational institutions offering AI related courses.

5.1. MANUFACTURING

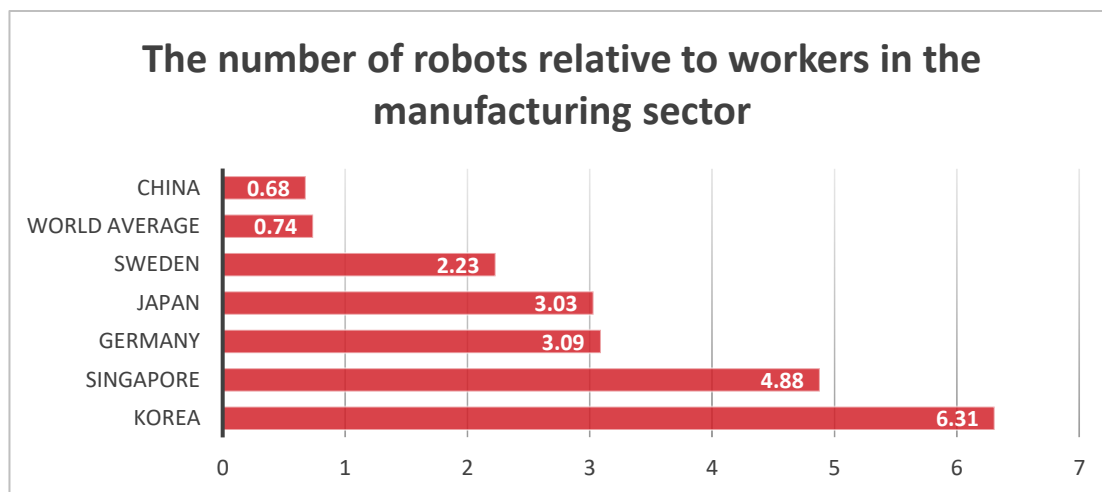
Japan has traditionally been at the forefront of robotic technology. Kawasaki Heavy Industries began commercial production of industrial robots in 1969 and companies such as FANUC, Sony, and the Yaskawa Electric Corporation led the way in robotic development during Japan's economic rise. Automation and the use of robotics in industrial production have been an integral part of Japan's postwar economic success.

More recently, the advancement of the robotics industry has been promoted and encouraged by the Japanese government through such policies as the New Robot Strategy (2015). Aiming to address the issues of aging population, a shrinking workforce, low labor productivity and increasing competition from European, US and Chinese manufacturers, the government seeks to 1) invest JPY 100 billion (USD 910 million) in robot-related projects during 2015-2020, 2) expand the robotics market to JPY 2.4 trillion (USD 22 billion), and 3) set up a new robot testing field in Fukushima. Key measures and 2020 targets include:

- manufacturing - increase the robotization of the assembly process to 25% for large companies and to 10% for small ones
- services – increase the rate of robot usage to 30% in logistics, wholesale, retail, hotels and restaurants
- nursing – aim to expand the domestic market to JPY 50 billion (USD 455 million)
- healthcare – deploy more than 100 cases of medical robot equipment
- infrastructure, disaster prevention, construction – 30% adoption rate of intelligent construction; maintenance utilizing IoT and AI for 20% of critical infrastructure
- agriculture, food industry – deploy self-driving tractors, introduce over 20 types of robots for labor saving

Despite increasing competition Japan is still a leader in robot production and industrial use, and in 2016 exported approximately USD 1.6 billion worth of industrial robots, which is more than the amount exported by Germany, France, Italy, United States, South Korea combined. Japan also has one of the highest rates of robot deployment in manufacturing on a per worker basis, as can be seen in Figure 3.

Figure 4: The number of robots relative to workers in the manufacturing sector



Source: International Federation of Robotics, World Robotics 2017 – Industrial Robots

Some of the main players include (general robotics) Sony, Honda, Toyota, Toshiba, and (industrial robotics) Mitsubishi Electric, Denso, OTC Daihen, Epson, FANUC, Intelligent Actuator, Kawasaki, Nachi-Fujikoshi, Yaskawa Electric Corporation.

The adoption of AI in the manufacturing sector is driven by low labor productivity, the shrinking workforce and competition from China and Korea, forcing Japan to look into new areas and sources of innovation. The opportunities for AI companies in this sector are in technologies that transform robots from being pre-programmed dumb automata into intelligent machines that can gather data from their environments and learn from it. AI is seen as a way to move from achieving greater manufacturing efficiency to improving quality and accuracy.

For example, Preferred Networks’s collaboration with Fanuc has produced robots that use deep reinforcement learning to teach themselves how to perform new tasks. In a similar fashion, Swiss companies with applicable AI technologies - machine vision, imitation learning, self-supervised learning, and robot training – have opportunities in this sector.

The examples of the application areas include:

- (1) Quality control – recent scandals in automotive and heavy industries unveiled quality assurance issues as skilled labor shortages lead to unskilled personnel performing inspections. AI could be deployed to address this need
- (2) Detection of machinery failure
- (3) Predictive maintenance
- (4) Picking and sorting
- (5) Reducing design time
- (6) Reducing materials waste
- (7) Improved production reuse

Case Study	Preferred Networks (Japanese startup) and Fanuc (robot manufacturer)
Type of deal	R&D alliance since 2015. In April 2018 the companies announced new AI functions applying machine learning/deep learning to Fanuc’s FA, ROBOT, and ROBOMACHINE products.
Technology	FA: AI Servo Tuning – applies machine learning to perform granular tuning of the parameters for controlling servomotors. ROBOT: AI Bin Picking – allows the robot to automatically learn the order in which items should be picked up. ROBOMACHINE: AI Thermal Displacement Compensation - utilizes machine-learning to predict and adjust for the thermal displacement caused by temperature fluctuations, which further increases machining accuracy by 40%.

Success	First products applying AI to robots available for sale from April 2018
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5.2. AUTONOMOUS VEHICLES

By 2030 the transport sector (driverless taxis and trucks) is expected to grow to JPY 30.48 trillion (USD 277 billion). Including driverless cars (manufacturing), these two sectors will have a market value of JPY 42.65 trillion (approx. USD 388 billion). The aging population (an increased need to transport the elderly, accidents involving seniors, a lack of drivers) and the upcoming 2020 Olympics are the main drivers of advancements in this space. The government wants to see the first self-driving cars launched by the 2020 Tokyo Olympics, and to commercialize the service in 2022. It is expected that by 2030 the sales of autonomous vehicles will account for over 30% of new car sales.

Competition between domestic and foreign players, and collaboration with companies across industries are some notable characteristics of this sector: Toyota, Nissan and DeNa (Easy Ride robo-vehicle), DeNa and ZMP (driverless taxi trials), Sony, ZMP and Komatsu (autonomous unmanned construction and mining machinery), and Softbank and Mitsubishi Estate (autonomous public transport). Foreign players like Baidu and Uber are looking to launch their self-driving services in Japan.

There are currently no regulations permitting self-driving cars. The government is pushing to accelerate the process to allow the use of fully autonomous vehicles by 2025. There are no particular regulatory barriers for market entry, so the main challenge is expected to be understanding and clearing the AV related regulations once they are in place.

Case Study	ZMP (Japanese AI/robotics company), Hinomaru Kotsu (taxi company) & Tokyo Metropolitan Government
Technology	Driverless taxis. The project was partly financed by the Tokyo Metropolitan Government
Success	Completed a successful trial of driverless taxis, aiming for service by 2020 Olympics

Case Study	Nauto Inc (US startup) & Orix Auto (fleet lease company)
Type of deal	Camera service added to commercial fleet offering
Technology	A camera that records and analyses the behavior of the driver, road conditions and obstacles on the road. The dashboard camera, equipped with AI, can detect if the driver is dozing off or is not concentrating on the road. It can prevent collisions and improve driver behavior through alerts. In addition to being a solution to improve fleet safety, Nauto's system and data platform can provide information for self-driving technologies.
Success	The product/service has been available to corporate customers since August 2018. Nauto secured investment of USD159 million in Series B (July 2018) from a group of companies which included Softbank and Toyota AI Ventures.

Case Study	Wayfarer (US startup) & Kyoto City Government
Type of deal	Kyoto City received a research grant from the Ministry of Land, Infrastructure, Transport and Tourism to evaluate the viability of Wayfarer as a new transportation system for the city
Technology	Wayfarer offers a system of automatically controlled electric vehicles accommodating two people, that runs on a dedicated roadway (utilizing existing infrastructure) transferring users to their destinations on demand. The system is meant to replace or add capacity to public transportation. Kyoto City is looking to assess the technology to address the increasing number of foreign tourists.

5.3. DIGITAL HEALTHCARE

A shortage of medical personnel and rising medical costs as a result of the rapidly aging society is driving the implementation of artificial intelligence in this area. In June 2017 the Ministry of Health, Labour and Welfare (MHLW) released a report entitled "Utilizing Artificial Intelligence in Healthcare Sector" describing the importance of applying AI in areas such as surgery assistance, nursing, diagnostic imaging support and drug development. By teaming up with businesses and academia the government is looking to establish ten model hospitals deploying AI technologies by 2022. A budget of USD 100 million was set aside to support the program. Fuji Keizai research firm forecasts that the Japan market related to AI-enhanced treatment will reach JPY 15 billion (USD 136.4 million) by 2025, which is approximately four times the 2016 number.

Regenerative medicine is an area of strength for Japan. Investment in this industry greatly increased after Professor Shinya Yamanaka was awarded the Nobel Prize for iPS cell research in 2012.

In 2014 the government revised the Pharmaceuticals and Medical Devices Act (PMDA Act) and the Act on the Safety of Regenerative Medicine covering safety in research, clinical trials and medical practice that involves cell and gene therapies, and the conditional approval process for such medicines, which resulted in Japan becoming the country with the fastest approval scheme for regenerative medicine-related products. The favorable environment is attracting foreign players – in 2015 Nikon subsidiary Nikon CeLL Innovation entered a collaboration with Lonza to develop, manufacture and test cell and gene therapies in the Japanese market.

However, whilst Japanese researchers can develop innovative cell treatments, there is an emerging need for AI technologies that enable production and treatment at scale. The RIKEN Center for Developmental Biology works on improving patients' vision by creating special cellular sheets and transplanting them into diseased retinas, but only a limited number of researchers are skillful enough to carry out this work. RIKEN is seeking AI technologies that can enable robots to learn how to prepare and select cells at the skill level of experienced iPS cell researchers, and then teach these skills to other robots.

Companies in this sector include Hitachi Healthcare, Canon Medical Systems, NEC, Kyocera, and NTT Data. Japanese companies are looking to catch up to international competitors, which could potentially create opportunities for Swiss companies.

Any company offering healthcare related technologies should be aware of the strict regulations applicable in this industry.

Case Study	Ubie (Japanese startup) & Kanden Venture Management (KVM) - the venture capital arm of Kansai Electric Power Company (KEPCO)
Type of deal	Investment – approximately JPY 300 million yen (about USD 2.7 million), series A, May 2018
Technology	AI Monshin Ubie – an AI-driven medical inquiry SaaS that uses natural language processing and question-setting algorithm to automatically create a template according to each patient's answers. Dr. Ubie - a disease prediction app that leverages knowledge of medical treatment and a probability/statistical model and machine learning technology to assess the risk of future diseases.
Success	AI Monshin Ubie - beta version launched in 2017, a product version has been used by 50 institutions by December 2017. From May 2018 deployed at Hitachi General Hospital, in joint multi-center research with Miyazaki University since summer 2018.

Case Study	NTT Data and DeepTek Inc (startup, HQ in US, operations in Pune, India)
Type of deal	Investment (amount not disclosed), October 2018 Part of NTT Data's global expansion of radiology diagnostic support business - Unified Clinical Archive (vendor-agnostic solution used to increase the efficiency of diagnosing diseases)
Technology	Assisted and augmented imaging technology covering radiographs, CT scans, MRI and other devices
Success	An experiment to check for emphysema was conducted at a hospital in India, where DeepTek was already providing digital diagnostic support. NTT Data is looking to conduct research in Japanese hospitals in FY2018 with the use of its United Clinical Archive, with the aim to commercialize the solution in FY2019. This solution is already used in 1,100 clinical sites and NTT Data has the ambition to reach JPY 10 billion in global sales by 2022.

5.4. ELDERLY CARE

The proportion of elderly (over 65 years old) in the Japanese population is currently around 28%, up from 26.6% in 2015. The National Institute of Population and Social Security Research forecasts that this number will be no less than 38.4% by 2065. This graying of society combined with shortage of nursing staff militates towards the deployment of AI and AI driven robots in this industry.

Case Study	Preferred Networks Inc (Japanese startup) & Toyota Motor
Technology	Autonomous tidying-up robot assisting elderly and disabled. Through deep learning based on the images collected as the device operates, it can identify and learn about the room layout and furniture. Image recognition feature allows the robot to identify scattered objects and return them to designated locations.

5.5. FINANCIAL SERVICES

Fintech is a growing sector for Japan. A number of recent changes to the law have spurred Japanese banks to adopt new technologies.

Some the recent regulatory changes making the deployment of new technologies easier:

- (1) The restriction on the upper limit (5%) on investment in fintech startups has been lifted, meaning that now Japanese banks have more flexibility to invest in new technologies
- (2) The introduction of the Open API rule provided fintech companies with an access to the systems of financial institutions via API – making it easier for depositors to give third parties access to their accounts and data
- (3) Regulatory sandbox – a “FinTech Proof-of-Concept (PoC) Hub” established in September 2017 by the Japan Financial Services Agency allowing companies to explore and evaluate various ideas without regulatory restrictions. One of the Japanese Fintech startups – FRONTEO – already made use of the hub to conduct a trial with a number of major Japanese banks (MUFG Bank, Bank of Yokohama, SMBC Nikko Securities and Resona Bank) applying its KIBIT engine to analyze the contents of customer support cases to assess productivity, workload, accuracy, etc.

Case Study	Japan Digital Design, Inc. (JDD, subsidiary of MUFG bank) & ExaWizards Inc. (early stage Japanese startup)
Type of deal	Business alliance and an investment, announced on March 27, 2018
Technology	ExaWizards is involved in the development of an artificial intelligence-based platform, that applies machine and deep learning to image and data analysis, offering solutions in a range of industries. Japan Digital Design and ExaWizards are looking to cooperate on the development of online finance products and HR tech services using video and voice analysis, that would support banking personnel addressing the issues of declining labor force

5.6. AGRICULTURE

Japanese agriculture industry faces two major issues – rural depopulation and the aging population. In 2005 there were 3,353,000 people engaged in agriculture, but this figure dropped to 2,606,000 in 2010, and 1,922,000 in 2016. Further, 65.2% of farmers in Japan are over 65 years old. Utilizing IoT and AI is key to improve the productivity in this industry. The main applications are automatic picking of harvest (which constitutes 20% of farm work), crop classification and monitoring.

Companies involved in the space include Panasonic, Fujitsu, Softbank, Incubit and OPTiM.

Case Study	OPTiM (Japanese startup) & Softbank
Type of deal	Trials of smart agriculture solutions using drones in Dec 2017 in Hokkaido
Technology	The drone collects images that are stored and analyzed by “Agri Assistant” app along with the temperature, humidity, sunlight, soil temperature, soil moisture, and electrical conductivity information collected from IoT sensors. The app is used to optimize cultivation. Drone and app technologies are provided by OPTiM, whereas Softbank’s contribution includes network and IoT platform.

Case Study	Panasonic
Type of deal	Trial at experimental farm of tomato picking robot
Technology	The robot uses combination of cameras, range image sensor and artificial intelligence technologies to decide which tomatoes are ripe, and then picks them. Although not as fast as

	expert pickers (the robot can pick one tomato per six seconds – experts do it in three seconds), humans need can only do this work for 3-4 hours at a stretch – the robots can work more than 10 hours straight and can work at night.
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5.7. ENERGY

Innovation in this sector is driven by:

- (1) Competition as a result of the deregulation of the power retail market (April 2016), that put an end to regional monopolies and opened the market to new entrants. Utility companies and new power suppliers are looking for ways to differentiate their offerings and attract/retain customers. Wide deployment of smart meters and home energy management systems (HEMS) generated large amounts of data that can be used as learning material for AI.
- (2) The growth of renewables leading to a more distributed energy system. Technologies that improve and optimize energy generation, allocation and redistribution of energy are in demand.

In addition to regional utilities, players in the market include Hitachi, Marubeni Corporation, Softbank, KDDI, Itochu Corporation and Panasonic.

Case Study	Moixa (UK startup) and ITOCHU Corporation and TRENDE Inc (a TEPCO subsidiary)
Type of deal	Moixa's AI platform has been included in ITOCHU's Smart Star home energy storage systems
Technology	Moixa offers GridShare - an artificial intelligence platform that allows households to minimize energy bills by optimizing battery and electric vehicle performance. It can also be used by the utility to offer smart tariffs and aggregate spare battery capacity acting as a virtual power plant, importing and exporting energy to deliver various services to the grid.
Success	Deployed in 3500 homes in Japan as of October 2018, looking to further expand into the virtual power plant business and electric vehicle charging management.

Case Study	Via Science (US startup) & Tokyo Electric Power Company (TEPCO)
Type of deal	Investment in 2016, POC in July 2017
Technology	Via Science offers software applications that identify and prioritize risks to critical infrastructure using a combination of high-performance computing, machine learning, and causal analytics. The POC planned by TEPCO was aiming to apply Via Science technology using artificial intelligence and "big data" to improve maintenance of transmission lines using predictive analytics.

5.8. SECURITY

Potential use cases in security include:

- (1) Identifying and tracking criminals through surveillance cameras
- (2) Utilizing drones in investigations, for example, illegal disposal of waste in the mountains (Police Department in Osaka Prefecture)
- (3) Automated surveillance to prevent crimes and acts of terrorism

Case Study	Tokyo Metropolitan Industrial Technology Research Institute, Seibu Railway, Nihon Unisys (a Japanese systems integrator) and Earth Eyes (Japanese startup)
Type of deal	Testing of a robot to be carried out at Tokyo's Seibu Shinjuku Station during Nov 26-30, 2018
Technology	A security robot equipped with an AI powered camera supplied by Earth Eyes can identify and report suspicious or violent behaviors and suspicious objects at train stations. It is able to avoid obstacles and alert security personnel through messages via a smartphone.
Success	Results of the tests are to be published

Case Study	Earth Eyes (Japanese startup) & NTT East
Type of deal	Announced the service "AI Guardman" on May 28, 2018

Technology	A camera using AI technology to prevent shoplifting. The technology allows cameras to spot and identify potential shoplifters, which could reduce shoplifting by 40%.
Success	NTT East expects to sell the camera to 10,000 stores over the period of three years

5.9. DISASTER MANAGEMENT

Technologies in this area can be divided into two categories: 1) disaster prediction, and 2) improvement of evacuation and response measures.

Kawasaki City, the Earthquake Research Institute at the University of Tokyo, the International Research Institute of Disaster Science (IRIDeS) at Tohoku University, and Fujitsu are applying AI to predict tsunamis and their impact on coastal areas. The Institute of Industrial Science at the University of Tokyo performed a study to use AI to predict the distribution of radioactive fallout in case of a nuclear power plant accident.

Efforts in this space have been impacted by the upcoming 2020 Tokyo Olympics and the need to effectively navigate large crowds of people. The Japanese government is working on a system that uses AI to assess and forecast the flow of large numbers of people. It uses the information collected through road cameras and usage of internet via smartphones. The idea is that it will help with congestion at venues and will allow for more effective security dispatch. The government has further plans to use this approach for disaster management and evacuation.

Companies	NTT Data and Social Coin (Spanish startup)
Type of deal	NTT Data and Social Coin have reached an agreement to collaborate in the development of a citizen participation platform based on AI.
Technology	This technology combines an AI text-analytics platform from Social Coin, called Citibeats, with an advanced linguistics analysis function from NTT Data, called Nazuki, which can pick up on emotions in any language, to understand the opinions and emotions of citizens on specific issues via the analysis of social networks and other data sources. NTT Data and its insurance client wanted to understand how to improve city resilience and disaster response across cities closest to disaster epicenters.

5.10. AI ASSISTANTS

This space includes various solutions, ranging from software (administrative work assistance, travel agent, customer support, etc.) to speakers and communication humanoid robots.

Some of the companies in this space include Softbank, Fujisoft, Daiwa Institute Research, KDDI, Concierge U, Gatebox, Self, Uni Robot, and Nextremer.

Companies	AKA LLC (US startup) & Softbank C&S
Type of deal	Partnership announced in Apr 2016
Technology	Artificially intelligent robot friend
Success	These robots are used to help children learn English in one of the schools in Toda City in Saitama Prefecture (Oct 2018)

6. Recommendations for Approaching the Market

In this report, we have explained that a rapidly aging society, shrinking workforce, and increased competition from Asian countries has led Japan to focus on AI as one solution. Japan's strength in hardware and manufacturing but relative weakness in software, plus the increasing importance of open innovation, has creates opportunities for Swiss AI companies, especially those that develop algorithms that can be trained on the masses of data produced by Japanese industry. With these findings in mind, we offer the following recommendations.

6.1. PRELIMINARY RESEARCH

If you are considering entering the Japanese market you need to do your homework and read up on the market. This report is a good place to start, but the more you know and understand about doing business in Japan, and what the various players are doing in the AI space, the more you improve your chances of success.

There are several services available through Swiss Business Hub Japan, which can serve as a contact point in exploring export opportunities. The services include gathering market intelligence, searching for distributors and developing sales pipelines. Please refer 8 Conclusion and Next Steps.

Note also the government programs described in Section 4.

6.2. EXPLORE OPPORTUNITIES IN JAPAN

At some point you will need to visit Japan and get in front of Japanese companies. This can take several forms. An initial visit may be as part of a mission organized by the Swiss Business Hub Japan. A mission is usually organized to coincide with a relevant trade show in Japan and would involve a number of Swiss AI companies co-exhibiting at a Swiss government booth at the show. These missions leverage the embassy's contacts and are very useful in establishing initial contact with potential customers and partners. A step beyond this would be to have your own booth at a relevant trade show. Trade shows in Japan – and particularly in Tokyo – are typically attended by the key players in the industry, plus distributors, government and industry bodies, and universities. To make the most of trade shows companies will use the matchmaking functions on the organizer's website to set up meetings in advance of the show, in addition to meeting with visitors to the booth during the show. Increased effectiveness can be achieved by setting up meetings during the days leading up to and following the event (this may require the help of a local partner – Japanese is still the lingua franca of business in Japan).

Other possibilities include joining open innovation programs, partnering with an accelerator, attending relevant conferences and taking part in hackathons (see Section 7 – Market Entry Resources)

An initial visit to Japan will give you market feedback on your technology, generate initial contacts and even identify potential customers. The next challenge is following up to validate interest, cultivate relationships and generate business.

6.3. FOLLOW-UP – REFINE MARKET ENTRY STRATEGY

Visiting Japan for preliminary discussions, attending trade shows and conferences, and having initial meetings with potential partners can all be done without a local partner or presence, but at some point, a company seeking to do business in Japan should consider some form of local presence – whether that be a local partner, a distributor or even a local entity.

It is not impossible to do business in Japan without having some kind of presence in the country – but it can be immensely difficult. Having a physical presence in Japan demonstrates to Japanese partners that a company is committed to the market and has a long-term view. Further, presence in the territory will enable the real-time support that is essential to success in the technical phases of an engagement.

Setting up an office from the get-go is not generally a prudent approach given the cost and time involved. A more typical approach is to work via a local partner(s), usually in conjunction with visits to the territory to provide technical support and training. Exactly what partners you work with, and what approach you adopt will be influenced by your offering, your business model, and your willingness to send people to Japan to support ongoing (technical) discussions.

6.3.1. Distributor

A partner could simply be a distributor –the appointment of a distributor enables a company to access the Japanese market while minimizing logistics issues and many other international trade-related risks. Issues can include the time to identify a suitable distributor, the training of the distributor, managing the relationship from a distance, and the fact that the distributor will own the customer relationship. Another caveat is that you will want to establish that any distributor will actively promote your offering.

6.3.2. Joint Venture

A joint venture may offer the most expedient entry to market. Entering into a joint venture with a Japanese company leverage its existing market knowledge and established distribution channels and can be highly profitable. However, managing the relationship is key, and reaching agreement on exactly how the JV is structured will take time. Typically, one of the JV partners is providing investment whilst the other provides a non-monetary contribution (IP, existing distribution network).

6.3.3. Agent/Local Partner

A sales agent can negotiate and conclude transactions on your behalf in Japan or carry out business development activities. An agent can also be used in conjunction with a distributor. An agent/local partner normally makes sense at the beginning stage of exploring the market. Another option includes companies providing business development services to represent you in the market - beyond listing up targets and making the initial contact with potential customers and partners on behalf of Swiss companies, such service providers can help to bridge any communication barriers and begin building up the relationship through regular follow-up, which is often the key to winning the trust of Japanese companies. This option could be of special interest to companies offering sophisticated products and solutions that requires direct engagement with the engineering teams in customer organizations and can serve as a low-risk approach to stepping into the market, prior to making any direct investments. Swiss Business Hub Japan can also be a good contact point for identifying suitable service providers in this field.

A hybrid approach is not uncommon – both working with partners who can deal with customers in Japanese on an everyday basis and visiting the territory at regular intervals to provide technical support and support commercial negotiations.

6.4. SETTING UP AN ENTITY

At some point it may make sense to establish your own entity in Japan.

6.4.1. Representative Office

A representative office can carry out research, marketing, advertising and make purchases, but cannot engage in sales. The establishment of representative offices does not require registration, but a representative office cannot ordinarily open bank accounts or lease real estate, so agreements for such purposes must instead be signed by the head office. This entity requires little time and effort to establish and offers one of the simplest methods for a company to establish a presence in Japan during the initial phase of researching the market and identifying that there is an opportunity.

6.4.2. Branch Office

A branch office can carry on business activities, open bank accounts and lease real estate in its own name but it does not have a separate corporate status and is considered an extension of the parent company. This form of entity is most often used by banks.

6.4.3. Subsidiary

If you want to hire local staff in Japan, it is possible to hire contractors without a local entity, but it is not typical – the average employee will prefer to be hired by a Japanese entity. A foreign company setting up a subsidiary company in Japan can choose between a joint-stock corporation (Kabushiki-Kaisha (K.K.)) or a limited liability company (Godo-Kaisha (G.K)). Setting up a

subsidiary company involves completing the required procedures stipulated by law and then registering it. There are service providers and lawyers that can facilitate this process and in practice it takes four to six weeks and costs approximately USD8,000 to 10,000. Once a foreign company has business in Japan, and needs to hire staff and rent office space, it usually makes sense to incorporate – it is easier to hire staff to a local entity, and it is easier for most Japanese companies to purchase from a Japanese entity than an overseas company. There are of course tax implications.

7. Market Entry Resources

7.1. ACCELERATORS

A number of accelerator programs are available for foreign startups seeking to enter the market.

FINOLAB - Focusing on Fintech

<http://finolab.tokyo>

The Japan Energy Challenge - Innovation in energy sector

<https://japanenergychallenge.com>

Tech Business Camp Tokyo - Accelerator program by Tokyo Metropolitan Government

https://www.seisakukikaku.metro.tokyo.jp/bdc_tokyo/english/bizcampky/newtech/

7.2. OPEN INNOVATION PROGRAMS

Many large corporations offer open innovation programs. Whilst these are not necessarily AI focused, AI technologies are generally in the scope of all open innovation programs.

NTT Data - The largest systems integrator holds competitions across various countries to attract startups.

<http://oi.nttdata.com/en/contest/>

Mitsubishi UFG - One of the largest banks

<https://innovation.mufg.jp/accelerator/>

eiicon – An open innovation platform with 3800 member companies from startups to large corporations

<https://eiicon.net>

7.3. RESEARCH INSTITUTES

National Institute of Advanced Industrial Science and Technology (AIST)

AIRC Artificial Intelligence Research Center

<http://www.airc.aist.go.jp/>

- Joint research partners with over 40 private businesses
- NEC–AIST AI Collaborative Research Lab
- Panasonic–AIST Advanced AI Collaborative Research Lab
- Working toward opening a joint research center with businesses.

AI technology consortium <http://www.airc.aist.go.jp/consortium/> (only in Japanese)

AI seminars and workshops <https://airc.doorkeeper.jp/>

RIKEN – One of the largest research institutes. In April 2016 launched the RIKEN Center for Advanced Intelligence Project (AIP), that includes several research groups and collaboration centers for NEC, Toshiba and Fujitsu.

<http://www.riken.jp/en/>
<http://www.riken.jp/en/research/labs/aip/>

The Okinawa Institute of Science and Technology Graduate University (OIST) – partnered with Deepcore⁹ AI incubator (Softbank subsidiary) to cooperate on joint projects.

<https://www.oist.jp>

7.4. ASSOCIATIONS

Japan Society for Artificial Intelligence (JSAI) has 3,200 members and organizes conferences, symposia, workshops and seminars.

<https://www.ai-gakkai.or.jp>

Whole Brain Architecture Initiative – NPO supporting the development of artificial general intelligence through open R&D communities.

<https://wba-initiative.org/en/>

Japan Deep Learning Association – Aims to develop competitiveness of Japanese industries through Deep Learning.

<https://www.jdla.org/en/about/>

Japan Robot Association (JARA): seeks to further the development of the robot manufacturing industry and promote robot tech

<https://www.jara.jp/e/>

The Robotics Society of Japan – Founded to promote academic advances in robotics

<https://www.rsj.or.jp/en>

7.5. RELATED EVENTS

7.5.1. Trade shows and conferences

3rd Robodex

Robot Development & Application EXPO

Tokyo Big Sight

16-18 January 2019

<https://www.robodex.jp/en-gb.html>

Industrial AI/IOT Expo

(part of Manufacturing World Japan)

6-8 February 2019

Tokyo Big Sight

<https://www.japan-mfg.jp/en-gb/about/aiotex.html>

AI Expo Tokyo 2019

3rd Artificial Intelligence Exhibition & Conference

3-5 April 2019

Tokyo Big Sight

(supported by the Japanese Society for Artificial Intelligence and the Japan Deep Learning Association)

<http://www.ai-expo.jp/en/>

AISTATS 2019: International Conference on Artificial Intelligence and Statistics

16-18 April 2019

Naha, Okinawa

⁹ <http://deepcore.jp/en/>

<http://www.aistats.org>

2nd World Conference on Robotics and Artificial Intelligence

10-12 June 2019

ANA Crowne Plaza Osaka

<https://scientificfederation.com/wcrai-2019/index.php>

Artificial Intelligence/Business AI 2019

9-11 October 2019

Tokyo Big Sight

<https://expo.nikkeibp.co.jp/xttech/ex/ai/index.html>

CEATEC Japan

15-18 October 2019

Makuhari Messe

<https://www.ceatec.com/en/>

Japan Tech Leaders Summit

https://www.addlight.co.jp/events/techleaders_spring2018/

The summit is an **international, exclusive, invitation-only event** that brings together international and Japanese innovators and investors who are ready to partner to build the next disruptive deep tech businesses. The event will be held entirely in English.

Hack Osaka (Osaka Innovation Hub)

<https://www.innovation-osaka.jp/hackosaka/en/>

7.5.2. AI Hackathons

Startup Weekend Tokyo

-nearly every second weekend

-in Japanese

<https://swtokyo.doorkeeper.jp>

Junction Tokyo Hackathon

-once per year

-international

<https://tokyo.hackjunction.com/junction-tokyo-2018/2018-tracks/artificial-intelligence/>

AngelHack

-once a year

<https://angelhack.com/portfolio-posts/angelhack-tokyo-hackathon-2018-may-19-20-2018/>

LongHash

-international, including Tokyo event once a year

<https://hack.longhash.com/#/>

8. Conclusion and Next Steps

Those Swiss and Liechtenstein companies who have read this report and believe they have a competitive advantage will need to conduct their own in-depth analyses to obtain a better understanding of the market opportunities available to them, along with possible challenges and risks.

Switzerland Global Enterprise (S-GE) offers customized solutions to support Swiss companies, especially small and medium-sized businesses hoping to expand their exports to Japan. S-GE works in cooperation with industry specialists to help Swiss exporters throughout the entire exporting process step-by-step.

Services include:

- Gaining initial assessment from local opinion leaders of a product's chances in Japan
- Gaining regulatory, legal and cultural knowledge about the product's market requirements
- Gaining knowledge of potential customer groups, their purchasing behavior, purchasing channels and expectations
- Gaining knowledge of national and international competitors and their market activities for the successful positioning of the product in Japan
- Supporting your specific sales activities
- Searching for possible distribution partners
- Setting up meetings with potential distribution partners as well as providing logistical support for traveling in Japan
- Assisting in the search for qualified staff
- Assisting in setting up business in Japan

We identify your issues and offer customized solutions to meet your needs so that you can succeed in the complex Japanese market.

Please contact:

Swiss Business Hub Japan

c/o Embassy of Switzerland

<https://www.s-ge.com/en/company/swiss-business-hub-japan>

tok.sbhjapan@eda.admin.ch

Telephone: +81 3 5449 8424

9. ANNEXES

9.1. LIST OF GOVERNMENT AGENCIES, ASSOCIATIONS AND INITIATIVES REFERENCED

9.1.1. Government Agencies

- (1) New Energy and Industrial Technology Development Organisation (NEDO) [[Link](#)]
- (2) Ministry of Internal Affairs and Communications (MIC) [[Link](#)]
- (3) Ministry Education, Culture, Sports, Science and Technology (MEXT) [[Link](#)]
- (4) Ministry of Economy, and Trade and Industry (METI) [[Link](#)]
- (5) Ministry of Health, Labour and Welfare (MHLW) [[Link](#)]

9.1.2. Associations

- (6) Advanced Industrial Science and Technology (AIST) AI Research Center (AIRC) [[Link](#)]
- (7) The Japanese Society for Artificial Intelligence [[Link](#)]
- (8) Japan Deep Learning Association [[Link](#)]

9.1.3. Initiatives

- (9) Artificial Intelligence Technology Strategy [[Link](#)]
- (10) Japan Revitalization Strategy 2016 [[Link](#)]
- (11) Japan's Robot Strategy [[Link](#)]
- (12) New Robot Strategy [[Link](#)]
- (13) Japan's New Robot Strategy [[Link](#)]
- (14) AI System Joint Development Support - 「AI システム共同開発支援事業」 [[Link](#)] [[Link2](#)] (Japanese only)
- (15) Subsidies for SMEs 中小企業庁「ものづくり補助金」 [[Link](#)]
- (16) "I-Challenge!" [[Link](#)]
- (17) Japan's FinTech Vision [[Link](#)]
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- (19) Draft AI R&D GUIDELINES for International Discussions, July 28, 2017 [[Link](#)]
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- (12) “Japan looks to launch driverless car system in Tokyo by 2020” (Reuters, Technology News, Jun 4, 2018) [[Link](#)]
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- (14) “AI medical startup Ubie gets estimated \$2.7M from Osaka power company’s VC arm” (The Bridge, May 22, 2018) [[Link](#)]
- (15) “Japan plans 10 'AI hospitals' to ease doctor shortages” (Nikkei, Aug 09, 2018) [[Link](#)]
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- (17) “Japanese AI venture develops autonomous tidying-up robot” (Kyodo News, Oct 16, 2018) [[Link](#)]
- (18) “Aging Japan: Robots may have role in future of elder care” (Reuters, March 28, 2018) [[Link](#)]
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- (25) “人工知能が「万引き G メン」に 被害額は 4 割減” - “AI “Shoplifting Guardman” reduces damage by 40%”, (IT Media, May 28, 2018) [[Link](#)]
- (26) “Japan to predict tsunamis with AI” (GovInsider, Nov 28, 2017) [[Link](#)]
- (27) “Artificial intelligence accurately predicts distribution of radioactive fallout” (The University of Tokyo, July 3, 2018) [[Link](#)]
- (28) “NTT DATA and Spanish Start-up Social Coin Collaborate in the Development of Regional Understanding Solutions by Leveraging AI” (NTT Data press release, Feb 23, 2018) [[Link](#)]
- (29) “Schools in Japan turn to AI robots for help with English classes” (Kyodo News, Oct 22, 2018) [[Link](#)]

9.3. LIST OF JAPANESE AI STARTUPS

	Company	URL	Technology/service	Industry	Strengths	Presence overseas	Established	Employees
1	ABEJA, Inc.	https://abejainc.com/	Business solutions using deep learning	Infrastructure, manufacturing, energy	AI, Machine Learning, Deep Learning, Big Data, IoT, Manufacturing, Retail, Productivity	No	2012	52
2	Acrovision	https://www.acrovision.jp	Web system development and application development. Also develops automatic text classification systems with the use of natural language processing.	AI assistants	AI, Machine Learning, Natural Language Processing, Image Recognition, Sentence Analysis	No	2007	122
3	AI, Inc.	https://www.ai-j.jp/	Development of products and services related to speech. "AI Talk" - a speech synthesis engine that can synthesize and create a variety of different voices, including emotional expressions.	AI assistants	AI, Speech/Voice Recognition, Voice Guidance, Synthetic Speech Engines, Operational Efficiency	No	2003	Not disclosed
4	AI inside Inc.	https://inside.ai/	Dx Suite – AI based application using AI OCR and RPA to accelerate digital transformation.	Various	AI, Machine Learning, Deep Learning, Operational Efficiency, Digital Transformation, Handwriting Recognition	No	2015	25
5	A.I. Squared, Inc.	https://www.ai2-jp.com/	Business operation automation solution that analyzes and learns from customer interaction data.	Various	AI, Text Analysis, Natural Language Processing, Operational Processing Automation	No	2015	17
6	AIREV Inc.	https://airev.co.jp/en/	Text analysis engine "Cohaku" capable of understanding the context of a conversation by analyzing the meaning and grammar of spoken words.	AI assistants	AI, Machine Learning, Deep Learning, Natural Language Processing, Text Analysis, Text Mining	No	2014	Not disclosed
7	Albert Inc.	https://www.albert2005.co.jp/	Data management, data analytics, AI/ML projects, DS training. Recently released Proactive AI chatbot with AlfaCom.	Various	AI, Machine Learning	No	2005	121
8	AlpacaJapan Co., Ltd.	https://www.alpaca.ai	AI fintech startup that builds deep learning and Big Data technology for financial markets. "AlpacaForecast" - a platform that predicts market movements, "AlpacaRadar/Search" - predicts market risk anomalies between cross assets.	Financial	AI, Finance, Trading, Operation Automation, Market Prediction and Forecasting	No	2016	22
9	ANTAS, Inc.	https://antas.co.jp/	Marketing technology services with AI, mobile and cloud technologies. AI services include an AI character recognition engine and "LAQOOT" - a type of RPA tool	Marketing/Digital Marketing	AI, Robotic Process Automation, Ad Technology, Ad Optimization, Character Recognition	No	2004	20
10	Ascent Robotics inc.	https://www.ascent.ai/en/	AI-powered autonomous vehicle technology	Robotics	AI, Robotics, Autonomous Driving, Autonomous Robot Systems	No	2016	34
11	AZIA CO., LTD.	https://www.azia.jp/	"Webcas" - an email marketing system, that automatically gathers customer information from such sources as LINE chat, email, surveys, etc. for more effective marketing campaigns. "Webcas Sense analyzer" - a text mining system.	Marketing/Digital Marketing	AI, E-mail Marketing, Text Mining, Digital Marketing	No	1995	86

12	BrainPad Inc.	https://www.brainpad.co.jp/	Financial data analytics, data mining, and prediction services. UltiPad - optimization engine that uses mathematical programming methods and prediction models from data mining. Conomi - matching engine that utilizes accumulated data from embedded sites and usage data.	Financial	AI, Analytics, Predictive Analytics	No	2004	267
13	BI.Garage Inc.	https://bi.garage.co.jp/	Combines data science and social media marketing to provide services related to client data management and targeted digital advertising.	Marketing/Digital Marketing	AI, Data Management, Web Ad Targeting	No	2006	Not disclosed
14	Capy Inc.	https://www.capy.me	Tools that can be used to protect websites from unauthorized logins. Capy Avatar Capture - next-generation anti-spam tool that prevents unauthorized logins from spam bots.	Security	AI, Prevention of unauthorized access, Security, Spam Bot Prevention	Office in Delaware, US	2012	Not disclosed
15	Cooori Japan Co., Ltd.	https://www.cooori.com	"Cooori" - a corporate TOEIC learning program using AI to analyze student's habits and provides personalised learning content	Education	AI, English Conversation, Dictionary, Apps, TOEIC	No	2015	Not disclosed
16	Concierge U	https://www.conciergeu.com	Natural language processing technologies to develop automatic communication systems such as chatbots. Its chatbot platform allows users to easily create chatbots for LINE or Facebook, even without programming skills.	AI assistants	AI, Machine Learning, Chatbots, Business Support, Personal AI	No	2015	Not disclosed
17	CriticMission Japan Co., Ltd.	https://www.criticmission.jp	AI application development/system development; development and support of software applications for "Pepper" robot.	Robotics	AI, Machine Learning, Natural Language Processing, Robotics, Operation Support, Consulting	No	2013	136
18	Cross-Compass Ltd.	https://www.xcompass.com/en/about/	M-IX - a machine learning platform for the manufacturing industry	Manufacturing	AI, Machine Learning, Deep Learning, Data Analytics, Consulting, Manufacturing	No	2015	38
19	CureApp, Inc.	https://cureapp.co.jp/en/	"Therapeutic Application" to treat diseases not covered by pharmaceuticals or hardware medical devices. The application uses an algorithm that analyzes each user's medical data and provides customized treatment advice for each individual.	Medical/Healthcare	AI, Medical Care, Medical Care Apps, Medical Treatment Analysis	No	2014	Undisclosed
20	Dagnosis	http://www.dagnosis.com/	Healthcare services: AI x Healthcare, AI x Dialogue, AI x Medical	Various (Medical, Cybersecurity)	AI, Medical Care, Medical Care Apps	No	2017	Undisclosed
21	Data Artist Inc.	https://www.data-artist.com/en/	Marketing and advertising tools using AI: "ADVANCED CREATIVE MAKER" - automatically creates banner ads, "SHAREST" - a TV viewer forecasting system	Marketing/Digital Marketing	AI, Machine Learning, Deep Learning, Natural Language Processing, Marketing, Advertising, Operating Effectiveness, Prediction and Forecasting	No	2013	70

22	DATUM STUDIO Co. Ltd.	https://datumstudio.jp/	Systematizes expert knowledge and builds AI systems for companies that want to utilize data for business. AI Prediction Service - a prediction model used for business applications. Business Intelligence Construction Service - supports business decision-making with the use of accumulated data	Big Data	AI, Big Data, Analytics	No	2014	85
23	Demand Side Science, Inc.	http://demand-side-science.jp/	Combines a range of open source technologies to develop high quality digital advertisement systems using AI.	Marketing/Digital Marketing	AI, Ad Technology, Ad Optimization	No	2012	Not disclosed
24	Glad Cube Inc.	https://www.glad-cube.com/	Digital marketing service "SiTest" leverages AI to improve website conversion rates and operational efficiency.	Marketing/Digital Marketing	AI, Heatmap Analysis, AB Testing, UX/UX Optimization, Digital Marketing	No	2007	94
25	Earth Eyes	http://earth-eyes.co.jp	AI powered camera	Security, medical, other	Video analysis, AI	No	2015	12
26	Eltes Co.,Ltd.	https://eltes.co.jp/english/	Big Data analysis solutions for risk detection. Internal Risk Intelligence Service - can detect internal fraud. AI Activity Analytics - for improved business operations.	Security	AI, Machine Learning, Big Data Analysis, Digital Risk, Natural Language Processing, Image Recognition/Detection, Data Mining	No	2004	84 (Feb 2018)
27	Engineered Intelligence	http://e-i.co	AI consulting services in areas such as image processing, natural language generation, and data projections.	Various	AI, Machine Learning, Deep Learning, Natural Language Processing, Marketing, Advertising, Business Efficiency, Prediction and Forecasting	No	2017	Not disclosed
28	ExaWizards Inc.	https://exawizards.com/en/	Various solutions using machine learning and deep learning for data/image analysis with a goal of improving the efficiency of MRI and CT anomaly detection.	Medical/Healthcare	AI, Machine Learning, Deep Learning, Data Analysis, Image Analysis, Medical Care, MCR/CT Image Processing, Patient Care	No	2016	100
29	FANTAS technology, Inc.	https://fantas-tech.co.jp	Studio apartment purchasing service called "Hayagai" that uses AI to make assessments of studio apartments	Real estate	AI, Real Estate, Consulting, Buying/Selling, Automatic Real Estate Assessments	No	2010	101
30	FiNC Technologies Inc.	https://finc.com/	Specializes in preventive healthcare. FiNC Diet Tutor - personal trainer app that uses AI to recommend training programs.	Medical/Healthcare	AI, Healthcare, Fitness, Preventive Healthcare, Apps, Diet	No	2012	Not disclosed
31	freee Co., Ltd.	https://www.freee.co.jp/	Offers "freee" - accounting software that improves the efficiency of creating invoices and management analysis.	Software	AI, Accounting Software, Operational Efficiency, Automatic Sorting, Business Analysis	No	2012	465
32	Fronteo	http://www.fronteo.com/	"Kibit" - provides various data analysis services including internal fraud investigations, market research, and document checking through analysis of electronic records and operation records. "Kibiro" - an AI-powered communication robot	Medical/Healthcare	AI, Machine Learning, Deep Learning, Big Data, Data Analysis, Communication Robots, Medical Care	Office in the USA, Korea, and Taiwan	2003	Not disclosed

33	Future Standard Co., Ltd.	https://www.futuresstandard.co.jp/en/about	Imaging and computer vision technology	Various	Image recognition	No	2014	21
34	GA technologies	https://www.ga-tech.co.jp/	Application for searching, managing and investing in real estate	Real estate	AI, Analytics	No	2013	257
35	Gatebox Inc.	https://gatebox.ai/home/	AI home assistant - a holographic female anime character	AI assistants	AI, Robotics, Home Robotics, IoT, Multi-modal Communication Systems, Image/Voice Recognition, Behavior Sensing	No	2014	Not disclosed
36	GRID INC.	https://gridpredict.jp/	AI platform leveraging Big Data to provide weather forecasting and traffic congestion mitigation.	Infrastructure, Energy	AI, Machine Learning, IoT, Big Data, Energy, Infrastructure, Image Recognition, Prediction and Forecasting, Traffic Congestion Alleviation	No	2009	28
37	HEROZ, Inc.	https://heroz.co.jp/en/	Originally a technology that applies machine and deep learning to develop AI for chess, shogi, Go and backgammon games, now expanding to provide applications for a variety of industries	Games	Machine Learning, Deep Learning	No	2009	34 (Mar 2018)
38	Hmcomm Co. Ltd.	http://www.hmcomm.co.jp/	Practical application of end-to-end speech recognition AI capable of providing multi-speaker/multi-language support	Various	Natural Language Processing, Speech Recognition	No	2012	30
39	Hotto Link Inc.	https://www.hottolink.co.jp/english	"Kuchikomi @ Kakaricho" service that gathers information from SNS and EC websites to improve marketing.	Marketing/Digital Marketing	AI, Social Media Analytics, Social Risk Management, Big Data	Office in Hong Kong	2000	52
40	Incubit Inc.	http://incubit.co.jp	Works with a variety of companies to carry out projects and create services using deep learning and machine learning. Some examples include detecting cracks in the road surfaces, identifying tomato branches through video analysis.	Healthcare, Manufacturing, Agriculture, Infrastructure	AI, Image Recognition, Text Mining, Numeric Data Analysis, Deep Learning	Office in Taiwan	2014	Not disclosed
41	Informetis Co., Ltd.	https://www.informetis.com/en/	Spinoff of Sony. Develops energy related services using Big Data and machine learning in order to improve energy efficiency and quality of life.	Energy	AI, Machine Learning, Energy, Big Data, Apps	Office in Cambridge, UK	2013	Not disclosed
42	JIG-SAW INC.	https://www.jig-saw.com/	Provides Big Data Analysis ("Megaro:AI") and automatic monitoring service ("Watchdog:IoT") for IoT devices	IoT	AI, IoT, Big Data Analysis, System Monitoring and Operation	Yes - USA	2001	78
43	Kabuku Inc.	https://www.kabuku.co.jp/en	Develops various services related to manufacturing, including on-demand manufacturing services. "MMS Connect" - utilizes AI to match companies with manufacturing requests to manufacturing service providers.	Manufacturing	AI, IoT, OnDemand Manufacturing, Matching	No	2013	Not disclosed
44	Kimura Information Technology Co., Ltd.	https://www.k-idea.jp/	Offers "Ai-q" - a system leveraging IBM's Watson AI technology that can be used for sales and customer support applications.	AI assistants	AI, Operational Efficiency, Sales Support, IBM Watson, Information Systems	No	2005	255
45	Kokopelli Inc.	https://www.kokopelli-inc.com/	Provides services that utilize AI to analyze corporate data and provide business related suggestions focusing on small businesses.	Various, Software	AI, Data Analysis, Management Support, Finance, Corporate Finance, Operation Efficiency	No	2007	Not disclosed

46	LeapMind Inc.	https://leapmind.io	Energy-efficient deep learning at the edge. Aims to accelerate the development of Deep Learning of Things (DoT) by introducing compact and energy efficient embedded deep learning solutions.	Various	AI, Machine Learning, Deep Learning, SaaS Systems, Annotation Tools, AI Platform	No	2012	73
47	LEEWAYS Inc.	https://leeways.co.jp	Real estate investment platform. "Gate" - can predicts the profitability of real estate investments by assessing risks such as the availability of apartments or rent price movements. "Gate.Business Plan" - a platform for real estate operators that uses the analytics function of "Gate"	Real estate	AI, Real Estate, Investments, Big Data, Prediction and Forecasting	No	2014	34 (June 2017)
48	Life Log Technology, Inc	https://calomeal.com/	"Calo Meal" - personal trainer powered by AI. Users can track ingested nutrients and calories, weight, body fat, and predict future body fat and weight with AI	Medical/Healthcare	AI, Personal Trainer, Healthcare, Diet, Apps	No	2016	Not disclosed
49	Liquid, Inc.	https://liquidinc.asia/	R&D of biometric search engines and image recognition, biometric authentication devices and tablet-type cashier systems. LIQUID Sensor - fingerprint recognition system that can be used with cashless payments, along with other applications. PASS - facial and fingerprint recognition to do cashless payments, event entries in lieu of tickets, and hotel check-ins	ICT	Image recognition	No	2013	30 (as of 2016)
50	LOCKON CO.,LTD.	https://www.lockon.co.jp	Offers several services that leverage AI: "AD EBIS" tracks web advertising performance, "THREe" facilitates automatic operation and optimization of web ads.	Marketing/Digital Marketing	AI, Online Advertising, Online Ad Platform, Automatic Optimization	Office in Vietnam and the US	2001	144
51	LPixel Inc.	https://lpixel.net/en/	Life science and imaging technology to provide imaging library.	ICT/IoT	AI, Machine Learning, Deep Learning, Image Analysis, Medical Care, Medical Imaging Diagnosis Support	No	2014	30
52	mazrica, Inc.	https://mazrica.com/	AI-powered sales support platform "Senses" which analyzes documents, mail, and customer data in order to provide recommendations and support business operations.	AI assistants	AI, Sales Support, Data Analytics	No	2015	25
53	MDR Inc.	http://mdrft.com/en/	Wildcat QDK - a Python SDK to make quantum computing easier for everyone.	Quantum Computing	Quantum Computing	No	2008	15
54	MERGERICK inc.	https://mergerick.com/	"Bambooshoot" - an EC website management support tool leveraging AI to analyze various data to improve website operation	Marketing/Digital Marketing	AI, EC Site Operation Support, Data Analytics	No	2013	24
55	MICIN, INC.	https://micin.jp/	Offers "curon" - an AI-powered medical diagnosis app and a number of other AI management tools and data solutions.	Medical/Healthcare	AI, Machine Learning, Deep Learning, Medical Management Tools, Apps	No	2015	30
56	Molcure Inc.	http://molcure.com/	An antibody drug development platform "Abtrace" that allows pharmaceutical companies to achieve high-efficiency, high-speed screening for drug discovery purposes.	Medical/Healthcare, Biotech	AI, Medical Care, Drug Discovery, Pharmaceuticals, Operational Efficiency	No	2013	Not disclosed

57	Morpho, Inc.	https://www.morpho-inc.com	Develops image/video related software for smartphones and other platforms specializing in image and video imagining technology. Uses deep learning and other AI technologies to provide image/video noise reduction and stabilization services, object tracking, and detection services.	Various	AI, Machine Learning, Deep Learning, Image Recognition/Diagnosis	Office in Korea and the US	2004	77
58	MUJIN Inc.	https://mujin.co.jp/en/	“Mujin Controller” - technology powered by AI that allows robots to perform multiple complex tasks	Robotics	AI, Industrial Robotics, Productions Systems	No	2011	68
59	Net Smile, Inc.	https://net-smile.jp/en/	“AI Scan Robo” and “AI Automation Robo” - AI-powered tools for improving business productivity.	AI assistants	AI, Machine Learning, Natural Language Processing, Chatbots, RPA, OCR, Operational Efficiency	No	2013	Not disclosed
60	Nextremer Co., Ltd.	http://www.nextremer.com/	An automated communication system “Minarai”, that uses natural language processing and can be used in online chatbots or robot guides in retail stores. It also has an “A.I. Galleria” system that uses image recognition to identify people and adjust the topic of the conversation.	Retail	AI, Natural Language Processing, Communication/Voice Recognition, Interactive Systems, Operational Efficiency	No	2012	40
61	OPTiM Corporation	https://en.optim.co.jp/	Secure mobile access and sharing, smart agriculture using AI, IoT in partnership with SoftBank	IoT	AI, Machine Learning, Deep Learning, IoT, AI Monitoring Camera, Voice/Image Analytics, Real Time Monitoring, Business Efficiency	No	2000	182
62	otafuku lab, Inc.	https://otafuku-lab.co/	Provides AI, machine learning and Big Data services.	Medical/Healthcare	AI, Machine Learning, Deep Learning, Image Recognition, Big Data, Shogi, Mental Healthcare	No	2009	Not disclosed
63	Panair, Inc.	https://corp.panair.jp/	Focuses on developing power supply and demand platform with AI and Big Data technologies.	Energy	AI, Big Data, Analytics	No	2012	35
64	PKSHA Technology	https://pkshatech.com/ja/	Develops algorithm-based products that deal with natural language communication and processing, customer services, and photo recognition, along with behavior prediction. Text Recognition Module - capable of recognizing and understanding natural language, HRUS - image recognition using deep learning, BEDORE - research on unstructured data retrieval by interactive interfaces using deep learning, CELLOR - CRM solution for retail and B2C markets that uses machine learning, PREDICO - customer behavior prediction tool that helps with the optimization of business operations	Various	AI, Machine Learning, Deep Learning, Natural Language Processing, Image Recognition/Analysis, Prediction and Forecasting, Big Data, Business Efficiency, Digital Marketing	No	2012	55 (Oct 2018)
65	PLAID, Inc.	https://plaid.co.jp	“KARTE” is a service that analyzes the behavior of users shopping on the website to provide them with a more personalized experience for a higher conversion rate.	Marketing/Digital Marketing	AI, Web Personalization, User Behavior Analysis, Digital Marketing	No	2011	Not disclosed

66	Preferred Networks, Inc.	https://www.preferred-networks.jp/ja/comp-any	Deep learning technology with a focus on IoT. The company also promotes Edge Heavy Computing as a way to deal with large amounts of data generated by devices.	transportation, manufacturing and bio/healthcare	AI, Machine Learning, Deep Learning, Data Management, Traffic Systems, Manufacturing, Bio Healthcare	Office in California, US	2014	Japan - 140, US - 7
67	QueryEye Inc.	https://queryeye.jp	Provides various planning, research, and development services related to computer technology. "Zero" - AI solution that can automatically create text sentences and is capable of automatically writing news articles.	AI assistants	AI, Machine Learning, Automatic Text Generation	No	2010	Not disclosed
68	Ridge-i Inc.	https://ridge-i.com/	Deep learning focusing on image processing. Carrying out a project with NHK TV for B&W image coloring and object detection	Television	Deep Learning, Image Recognition	No	2016	16
69	ROBOT PAYMENT INC.	https://www.robotpayment.co.jp/	Online and offline payment services, such as "Billing Management Robo" - a cloud service that automates billing tasks.	Cloud services	AI, Machine Learning, Payment Services, Billing Management Systems, Cloud Services	No	2000	50
70	robot start inc.	https://robotstart.co.jp/	Development of communication robots, additionally offers development, consulting and marketing services related to robotics.	Robotics	AI, Robotics, Consulting, AI Speakers	No	2014	Not disclosed
71	Routrek Networks, Inc.	http://www.routrek.co.jp	ZeRo.agri - a greenhouse farming system, that gathers and processes information from sunlight and soil sensors to automatically deliver optimal irrigation and fertigation.	Agriculture, ICT	AI, Analytics	No	2005	Not disclosed
72	Scigineer Inc.	http://www.scigineer.co.jp/	"Deqwas" - a personalized web marketing tool that analyses user behavior and changes the displayed products and services on the page to represent what could be of the highest interest for a particular user resulting in a higher conversion and clickthrough rates.	Marketing/Digital Marketing	AI, Recommendation Engines, Personalization, Digital Marketing, Fashion, Apps	No	2005	29
73	Sciseed Inc.	http://www.sciseed.jp/index.html	Recruiting support services. "AI Chat Supporter" - enables users to create customer support chatbots for the chat service LINE.	AI assistants	AI, Machine Learning, Deep Learning, Natural Language Processing, Chatbots	No	2015	30
74	scouty Inc.	https://scouty.co.jp	Headhunting service for engineers, which uses AI to automatically match the engineer by his/her skills to the appropriate company.	Human Resources	AI, Analytics	No	2016	17
75	SELF Inc.	http://self.systems/	A communication app "SELF", which adjusts to the user's interests and mental state by using AI to analyze conversation.	AI assistants	AI, Conversation /Voice Analysis, Communication Apps, Automatic Sales, Apps	No	2014	20
76	Seltech Corporation	https://seltech.co.jp/en/company	Connected Industry Platform using AI together with next-generation network security solutions. "FOXvisor" - an information security product.	Security	AI, IoT, Voice/Image Recognition, Security, Smart Housing	No	2009	50
77	SENSY Inc.	https://sensy.ai	"SENSY" - personal AI platform. "SENSY CLOSET" - an AI-powered fashion recommendation service. "SENSY MD" - a demand forecast engine. "SENSY BOT" - a chatbot service.	Marketing/Digital Marketing	AI, Personal AI, Fashion, Apps	No	2011	Not disclosed

78	Shannon Lab	http://shannon-lab.co.jp	Provides various AI consulting services and solutions for automated text generation and sentiment analysis.	Various	AI, Machine Learning, Deep Learning, Speech/Voice Analytics, AI Self-learning Systems, Speech Systems, Apps	No	2011	12
79	Smartmedical Corp.	https://smartmedical.jp/	Medical services and tools for self-care. Empath system that recognizes the mental state of users through voice analysis based on algorithms and can be used for mental training in sports or for stress checks.	Medical/Healthcare	AI, Voice/Emotion Recognition, Medical Care, Mental Health Care, ICT Selfcare	No	2010	Not disclosed
80	SmartNews, Inc.	https://www.smartnews.com/en/	A smartphone app that uses AI to automatically collate and organize the latest news for each individual user.	Media	AI, Natural Language Processing, News, Media	Office in San Francisco and New York, US	2012	Not disclosed
81	So-net Media Networks Corp.	http://www.so-netmedia.jp/en/	Digital advertising systems powered by "VALIS-Engine" - So-net Media Network's AI engine that facilitates highly targeted ads through the company's digital ad management platform "LOGICAD".	Marketing/Digital Marketing	AI, Personalization, Digital Marketing, Digital Advertising	Yes - Taiwan	2000	139
82	Social Welfare Corporation Zenkokuai	https://www.zenkoukai.jp/english/	R&D of nursing solutions. Launched a "Nursing Robot and AI Research Lab" with the aim of researching solutions using AI in the field of nursing care.	Medical/Healthcare	AI, Medical Care, Robotics, Nursing Care, Operational Efficiency	No	2005	423
83	SOINN Inc.	https://soinn.com	Self-Organizing Incremental Neural Network – an artificial brain which is capable of automated classification or forecasting for automatic operation of various machines or devices.	Various	AI, Big Data Analytics, Artificial Brain	No	2014	Undisclosed
84	Spectee Inc.	https://www.spectee.co.jp	"SNS Flash News" service that allows the user to automatically monitor, analyze and categorize images and videos that have been uploaded to social networks around the world.	Media	AI, Image/Video Monitoring, SNS Automatic Analysis	Office in Germany, the US	2011	35
85	Studio Ousia Inc.	http://www.ousia.jp/en/	Technical development and practical applications using Natural Language Processing technologies. "QA ENGINE" - has advanced analytical capabilities and automatically can respond to questions from users. "Semantic Kernel" - can analyze various text contents and be used for contextual ad targeting or customer sentiment tracking.	AI assistants	AI, Natural Language Processing, Data Analysis, Sentence Analysis, SNS Analysis, Customer Support Data Analysis	No	2007	Undisclosed
86	Tagpic Inc.	https://tagpic.jp/	"#CASPIC" - marketing support service that utilizes AI to automatically identify influencers on social media like Instagram	Marketing/Digital Marketing	AI, Natural Language Processing, Model/Influencer Casting, Marketing Support	No	2015	60
87	Tecnos Data Science Engineering	https://www.tdse.jp	Consulting, analytics and engineering services. "Scorobo" - an AI-powered platform used for forecasting, client analysis, operation optimization, detection of anomalies in finance, marketing or manufacturing.	Financial, marketing, manufacturing	AI, Machine Learning, Deep Learning, Data Analysis, Business Efficiency	Office in the US	2013	Undisclosed

88	Tifana.com Co., Ltd.	https://www.tifana.com/	"AI Sakura" - an AI powered client service system operating as a helpdesk for customer inquiries.	Various	AI, Machine Learning, Deep Learning, Automated Customer Service Systems, Natural Language Processing, Image/Voice/Emotion Recognition, Chatbots, Prediction and Forecasting	No	2000	60
89	Ubie, Inc.	https://www.compagny.dr-ubie.com/en-jp	AI Monshin Ubie – an AI-driven medical inquiry SaaS, which uses natural language processing and question-setting algorithm to automatically create a template according to each patient's answers. Dr. Ubie - a disease prediction app, which leverages knowledge of medical treatment and uses probability/statistical model and machine learning technology to assess the risk of future diseases.	Medical	AI, Natural Language Processing, machine learning	No	2017	Undisclosed
90	UEI Corporation	https://www.uei.co.jp/en/company/	Deep learning consulting services (image classification, training, consulting and deep learning guidance).	Various	Deep Learning, Image Recognition	No	2003	20
91	Ultimate Research Institute, Inc	https://www.ultimate-souken.co.jp	Portal site for apartment rentals. Uchikomi! AI - uses AI to match users with apartments that fit their preferences.	Real estate	AI, Real Estate, Rental Information, Apps	No	2012	Undisclosed
92	Unirobot Corporation	https://www.unirobot.com/	A robot called "Unibo" that can communicate with its users, recognize individuals and hold information about their interests, perform video calling, control home appliances, etc.	AI assistants	AI, Social Robots, Face/Emotion Recognition	No	2014	15 (as of 2017)
93	Usagee Inc.	https://usagee.co.jp/index.html	Develops web services and other software. "Hissha no Kimochi kangaeru man" - draws conclusions from text using natural language processing technology. "Okyakkuma" - centralized management tool for customer and staff interactions.	AI assistants	AI, Machine Learning, Natural Language Processing, Image Recognition, Sentence Analysis	No	2006	20
94	User Local, Inc.	http://www.userlocal.jp	Development of web access analytics and social media analysis tools. Provides a variety of AI-powered services such as chatbots, forecasting, and face recognition.	AI assistants	AI, Chatbots, Access Analytics, SNS Analysis, User Behavior Analysis	No	2007	37
95	WACUL INC.	https://wacul.co.jp/	System that uses AI to analyze website access, suggests improvements and predicts the effect of suggested improvements	Marketing/Digital Marketing	AI, Analytics	No	2010	47
96	WealthNavi Inc.	https://www.wealthnavi.com	AI technology to automate and make asset management tasks more efficient and productive.	Financial	AI, Robotic Advisors, Finance, Asset Management	No	2015	Not disclosed
97	Weblio, Inc.	https://www.weblio-inc.jp	English dictionary applications, conversation, translation services and study abroad support. Offers an AI-powered "English Conversation Nana" app, that allows user to learn and practice conversational English without a teacher.	Education	AI, English Conversation, Dictionary, Apps	Office in the Philippines	2005	Not disclosed
98	xenodata lab.	https://www.xenodata-lab.com	Financial data analytics tool that leverages natural language processing to analyze stocks and provide insights.	Financial	AI, Natural Language Processing	No	2016	17

N	Company name	Website URL	Technology/service description	Industry	Strengths	Presence overseas	Year established	Number of employees
1	ABEJA, Inc.	https://www.abeja.asia/	Business solutions using deep learning	Infrastructure, manufacturing, energy	AI, Machine Learning, Deep Learning, Big Data, IoT, Manufacturing, Retail, Productivity	No	2012	52
2	Acro vision	https://www.acrovision.jp	Provides various services such as web system development and application development. Also develops automatic text classification systems with the use of natural language processing.	AI assistants	AI, Machine Learning, Natural Language Processing, Image Recognition, Sentence Analysis	No	2007	122
3	AI, Inc.	https://www.ai-j.jp/english	Engaged in the development of products and services related to speech. "AI Talk" - a speech synthesis engine that can synthesize and create a variety of different voices, including emotional expressions.	AI assistants	AI, Speech/Voice Recognition, Voice Guidance, Synthetic Speech Engines, Operational Efficiency	No	2003	Not disclosed
4	AI inside Inc.	https://inside.ai/	Creator of Dx Suite – AI based application using AI OCR and RPA to accelerate digital transformation.	Various	AI, Machine Learning, Deep Learning, Operational Efficiency, Digital Transformation, Handwriting Recognition	No	2015	25
5	A.I. Squared, Inc.	https://www.ai2-jp.com/	Offers a business operation automation solution that analyzes and learns from customer interaction data.	Various	AI, Text Analysis, Natural Language Processing, Operational Processing Automation	No	2015	17
6	AIREV Inc.	https://airev.co.jp/en/about/	Provides a text analysis engine "Cohaku" capable of understanding the context of a conversation by analyzing the meaning and grammar of spoken words. The system can also be used for automatized tagging.	AI assistants	AI, Machine Learning, Deep Learning, Natural Language Processing, Text Analysis, Text Mining	No	2014	Not disclosed
7	Albert Inc.	https://www.albert2005.co.jp/	Recently released Proactive AI-based chatbot in collaboration with AlfaCom. Data management, Data Analytics, AI/ML projects, DS Training	Various	AI, Machine Learning	No	2005	121 (Mar 2018)
8	AlpacaJapan Co., Ltd.	https://www.alpaca.ai	AI Fintech startup that builds Deep Learning and Big Data technology for financial market. "AlpacaForecast" - a platform that predicts market movements "AlpacaRadar/Search" - a new product that predicts market risk anomalies between cross assets.	Financial	AI, Finance, Trading, Operation Automation, Market Prediction and Forecasting	No	2016	22
9	ANTAS, Inc.	https://antas.co.jp/	Antas provides marketing technology services with AI, mobile and cloud technologies. Its AI services include an AI character recognition engine and "LAQOOT" - a type of RPA tool	Marketing/Digital Marketing	AI, Robotic Process Automation, Ad Technology, Ad Optimization, Character Recognition	No	2004	20
10	Ascent Robotics inc.	https://www.ascent.ai/en/	AI-powered autonomous vehicle technology	Robotics	AI, Robotics, Autonomous Driving, Autonomous Robot Systems	No	2016	34
11	AZIA CO., LTD.	https://www.azia.jp/	Offers "Webcas" - an e-mail marketing system, that automatically gathers customer information from such sources as LINE chat, e-mail, surveys, etc. for more effective marketing campaigns.	Marketing/Digital Marketing	AI, E-mail Marketing, Text Mining, Digital Marketing	No	1995	86

			"Webcas Sense analyzer" - a text mining system.					
12	BrainPad Inc.	https://www.brainpad.co.jp/	Focuses primarily on Financial Data Analytics, Data Mining, and Prediction Services. UltiPad - Optimization engine that uses mathematical programming methods and prediction models from data mining. Conomi - Matching engine that utilizes accumulated data from embedded sites and usage data.	Financial	AI, Analytics, Predictive Analytics	No	2004	267
13	BI.Garage Inc.	https://bi.garage.co.jp/	Bi. Garage combines data science and social media marketing to provide services related to client data management and targeted digital advertising.	Marketing/Digital Marketing	AI, Data Management, Web Ad Targeting	No	2006	Not disclosed
14	Capy Inc.	https://www.capy.me	Provides tools that can be used to protect websites from unauthorized logins. Capy Avatar Capture - next-generation anti-spam tool that prevents unauthorized logins from spam bots.	Security	AI, Prevention of unauthorized access, Security, Spam Bot Prevention	Office in Delaware, US	2012	Not disclosed
15	Cooori Japan Co., Ltd.	https://www.cooori.com	"Cooori" - a corporate TOEIC learning program using AI to analyze student's habits and provides him/her with a personalised learning content	Education	AI, English Conversation, Dictionary, Apps, TOEIC	No	2015	Not disclosed
16	Concierge U	https://www.conciergeu.com	ConciergeU uses Natural Language Processing technologies to develop automatic communication systems such as chatbots. Its chatbot platform allows users to easily create chatbots for LINE or Facebook, even without programming skills.	AI assistants	AI, Machine Learning, Chatbots, Business Support, Personal AI	No	2015	Not disclosed
17	CriticMission Japan Co., Ltd.	https://www.criticmission.jp	AI application development/system development; development and support of software applications for "Pepper" robot.	Robotics	AI, Machine Learning, Natural Language Processing, Robotics, Operation Support, Consulting	No	2013	136
18	Cross-Compass Ltd.	https://www.xcompass.com/en/about/	M-IX - a Machine Learning Platform for manufacturing industry	Manufacturing	AI, Machine Learning, Deep Learning, Data Analytics, Consulting, Manufacturing	No	2015	38
19	CureApp, Inc.	https://cureapp.co.jp/en/	Developed a "Therapeutic Application" to treat diseases not covered by pharmaceuticals or hardware medical devices. This application uses an algorithm that analyzes each user's medical data and provides customized treatment advice for each individual.	Medical/Healthcare	AI, Medical Care, Medical Care Apps, Medical Treatment Analysis	No	2014	Undisclosed
20	Dagnosis	http://www.daignosis.com/	Healthcare services: AI x Healthcare, AI x Dialogue, AI x Medical	Various (Medical, Cybersecurity)	AI, Medical Care, Medical Care Apps	No	2017	Undisclosed

21	Data Artist Inc.	https://www.data-artist.com/en/	Marketing and advertising tools using AI: "ADVANCED CREATIVE MAKER" - automatically creates banner ads, "SHAREST" - a TV viewer forecasting system	Marketing/Digital Marketing	AI, Machine Learning, Deep Learning, Natural Language Processing, Marketing, Advertising, Operating Effectiveness, Prediction and Forecasting	No	2013	70
22	DATUM STUDIO Co. Ltd.	https://datumstudio.jp/	Systematizes expert knowledge and builds AI systems for companies that want to utilize data for business. AI Prediction Service - a prediction model used for business applications. Business Intelligence Construction Service - supports business decision-making with the use of accumulated data, making data easier to understand.	Big Data	AI, Big Data, Analytics	No	2014	85
23	Demand Side Science, Inc.	http://demand-side-science.jp/	Demand Side Science combines a range of open source technologies to develop high quality digital advertisement system using AI.	Marketing/Digital Marketing	AI, Ad Technology, Ad Optimization	No	2012	Not disclosed
24	Glad Cube Inc.	https://www.glad-cube.com/	Digital marketing service "SiTest" leverages AI to improve website's conversion rates and operational efficiency.	Marketing/Digital Marketing	AI, Heatmap Analysis, AB Testing, UX/UX Optimization, Digital Marketing	No	2007	94
25	Earth Eyes	http://earth-eyes.co.jp	AI powered camera	Security, medical, other	Video analysis, AI	No	2015	12
26	Eltes Co.,Ltd.	https://eltes.co.jp/english/	Provides big data analysis solutions for risk detection. Internal Risk Intelligence Service - can detect internal fraud AI Activity Analytics - for improved business operations.	Security	AI, Machine Learning, Big Data Analysis, Digital Risk, Natural Language Processing, Image Recognition/Detection, Data Mining	No	2004	84 (Feb 2018)
27	Engineered Intelligence	http://e-i.co	Specializing in AI consulting services in areas such as image processing, natural language generation, data projections, etc.	Various	AI, Machine Learning, Deep Learning, Natural Language Processing, Marketing, Advertising, Business Efficiency, Prediction and Forecasting	No	2017	Not disclosed
28	ExaWizards Inc.	https://exawizards.com/en/	Provides various solutions using machine learning and deep learning for data/image analysis with a goal of improving the efficiency of MRI and CT anomaly detection.	Medical/Healthcare	AI, Machine Learning, Deep Learning, Data Analysis, Image Analysis, Medical Care, MCR/CT Image Processing, Patient Care	No	2016	100
29	FANTAS technology, Inc.	https://fantas-tech.co.jp	Offers a studio apartment purchasing service called "Hayagai" that uses in-house developed AI capable of automatically making assessments of studio apartments, effectively enabling direct buying and selling of apartments based on the studio apartment assessment values provided by the Hayagai system.	Real estate	AI, Real Estate, Consulting, Buying/Selling, Automatic Real Estate Assessments	No	2010	101
30	FiNC Technologies Inc.	https://finc.com/	FiNC specializes in preventive healthcare. FiNC Diet Tutor - personal trainer app that uses AI to recommend various training programs.	Medical/Healthcare	AI, Healthcare, Fitness, Preventive Healthcare, Apps, Diet	No	2012	Not disclosed

31	freee Co., Ltd.	https://www.freee.co.jp/	Offers "freee" - an accounting software, that improves efficiency of creating invoices and management analysis.	Software	AI, Accounting Software, Operational Efficiency, Automatic Sorting, Business Analysis	No	2012	465
32	Fronteo	http://www.fronteo.com/	"Kibit" - provides various data analysis services including internal fraud investigations, market research, and document checking through the analysis of electronic records and operation records. "Kibiro" - an AI-powered communication robot	Medical/Healthcare	AI, Machine Learning, Deep Learning, Big Data, Data Analysis, Communication Robots, Medical Care	Office in the USA, Korea, and Taiwan	2003	Not disclosed
33	Future Standard Co., Ltd.	https://www.futurestandard.co.jp/en/about	Imaging and Computer Vision technology	Various	Image recognition	No	2014	21
34	GA technologies	https://www.ga-tech.co.jp/	Offers an application for searching, managing and investing in real estate	Real estate	AI, Analytics	No	2013	257
35	Gatebox Inc.	https://gatebox.ai/home/	AI home assistant - the user interacts with a hologram female anime character	AI assistants	AI, Robotics, Home Robotics, IoT, Multi-modal Communication Systems, Image/Voice Recognition, Behavior Sensing	No	2014	Not disclosed
36	GRID INC.	https://gridpredict.jp/	AI platform leveraging Big Data to provide weather forecasting and traffic congestion mitigation.	Infrastructure, Energy	AI, Machine Learning, IoT, Big Data, Energy, Infrastructure, Image Recognition, Prediction and Forecasting, Traffic Congestion Alleviation	No	2009	28
37	HEROZ, Inc.	https://heroz.co.jp/en/	originally a technology that applies machine and deep learning to develop AI for chess, shogi, go and backgammon games, now expanding to provide applications for a variety of industries	Games	Machine Learning, Deep Learning	No	2009	34 (Mar 2018)
38	Hmcomm Co. Ltd.	http://www.hmcomm.co.jp/	Practical application of end-to-end speech recognition AI capable of providing multi-speaker / multi-language support	Various	Natural Language Processing, Speech Recognition	No	2012	30
39	Hotto Link Inc.	https://www.hottolink.co.jp/english	"Kuchikomi @ Kakaricho" service that gathers information from SNS (Twitter, Facebook, etc.) and EC websites to improve marketing.	Marketing/Digital Marketing	AI, Social Media Analytics, Social Risk Management, Big Data	Office in Hong Kong	2000	52
40	Incubit Inc.	http://incubit.co.jp	Incubit works with a variety of companies to perform projects and create services using deep learning and machine learning. Some examples include detecting cracks in the road surfaces, identifying tomato branches through video analysis.	Healthcare, Manufacturing, Agriculture, Infrastructure	AI, Image Recognition, Text Mining, Numeric Data Analysis, Deep Learning	Office in Taiwan	2014	Not disclosed
41	Informetis Co., Ltd.	https://www.informetis.com/en/	Informetis is a spinoff of Sony, that develops energy related services using Big Data and machine learning in order to improve energy efficiency and quality of life.	Energy	AI, Machine Learning, Energy, Big Data, Apps	Office in Cambridge, UK	2013	Not disclosed
42	JIG-SAW INC.	https://www.jig-saw.com/	Provides Big Data Analysis ("Megaro:AI") and automatic monitoring service ("Watchdog:IoT") for IoT devices	IoT	AI, IoT, Big Data Analysis, System Monitoring and Operation	Yes - USA	2001	78

43	Kabuku Inc.	https://www.kabuku.co.jp/en	Kabuku develops various services related to manufacturing, including on-demand manufacturing services. "MMS Connect" - utilizes AI to match companies with manufacturing requests to manufacturing service providers.	Manufacturing	AI, IoT, OnDemand Manufacturing, Matching	No	2013	Not disclosed
44	Kimura Information Technology Co., Ltd.	https://www.k-idea.jp/	Offers "Ai-q" - a system leveraging IBM's Watson AI technology that can be used for sales and customer support applications.	AI assistants	AI, Operational Efficiency, Sales Support, IBM Watson, Information Systems	No	2005	255
45	Kokopelli Inc.	https://www.kokopelli-inc.com/	Provides services that utilize AI to analyze corporate data and provide business related suggestions focusing on small businesses.	Various, Software	AI, Data Analysis, Management Support, Finance, Corporate Finance, Operation Efficiency	No	2007	Not disclosed
46	LeapMind Inc.	https://leapmind.io	Energy-efficient deep learning on edge. The company's aim is to accelerate the development of Deep Learning of Things (DoT) by introducing compact and energy efficient embedded deep learning solutions. It was able to create a solution running deep learning on edge in low-energy computing environment as small as FPGA.	Various	AI, Machine Learning, Deep Learning, SaaS Systems, Annotation Tools, AI Platform	No	2012	73
47	LEEWAYS Inc.	https://leeways.co.jp	Real estate investment platform. "Gate" - can predicts the profitability of real estate investments by assessing risks such as the availability of apartments or rent price movements. "Gate.Business Plan" - a platform for real estate operators that uses the analytics function of "Gate"	Real estate	AI, Real Estate, Investments, Big Data, Prediction and Forecasting	No	2014	34 (June 2017)
48	Life Log Technology, Inc	https://calomeal.com/	"Calo Meal" - personal trainer powered by AI. Users can on a daily basis easily track ingested nutrients and calories, weight, body fat, and predict future body fat and weight with AI, based on user information gathered.	Medical/Healthcare	AI, Personal Trainer, Healthcare, Diet, Apps	No	2016	Not disclosed
49	Liquid, Inc.	https://liquidinc.asia/	R&D of biometric search engines and image recognition, biometric authentication devices and tablet-type cashier systems. LIQUID Sensor - Fingerprint recognition system that can be used with cashless payments, along with other applications. PASS - Technology that uses facial and fingerprint recognition to do cashless payments, event entries in lieu of tickets, and hotel check-ins	ICT	Image recognition	No	2013	30 (as of 2016)
50	LOCKON CO.,LTD.	https://www.lockon.co.jp	Offers several services that leverage AI: "AD EBIS" tracks web advertising performance, "THREe" facilitates automatic operation and optimization of web ads.	Marketing/Digital Marketing	AI, Online Advertising, Online Ad Platform, Automatic Optimization	Office in Vietnam and the US	2001	144
51	LPixel Inc.	https://lpixel.net/en/	Life Science and Imaging technology to provide imaging library.	ICT/IoT	AI, Machine Learning, Deep Learning, Image Analysis, Medical Care, Medical Imaging Diagnosis Support	No	2014	30

52	mazrica, Inc.	https://mazrica.com/	Offers an AI-powered sales support platform "Senses". It analyses such information as documents, mail, customer data in order to provide recommendations and support staff's business operations.	AI assistants	AI, Sales Support, Data Analytics	No	2015	25
53	MDR Inc.	http://mdrft.com/en/	Wildcat QDK (Quantum Development Kit), A Python SDK to make quantum computing easier for everyone.	Quantum Computing	Quantum Computing	No	2008	15
54	MERGERICK inc.	https://mergerick.com/	"Bambooshoot" - an EC website management support tool leveraging AI technology to analyze various data to improve operation of the website	Marketing/Digital Marketing	AI, EC Site Operation Support, Data Analytics	No	2013	24
55	MICIN, INC.	https://micin.jp/	MICIN offers "curon" - an AI-powered medical diagnosis app and a number of other AI management tools and data solutions.	Medical/Healthcare	AI, Machine Learning, Deep Learning, Medical Management Tools, Apps	No	2015	30
56	Molcure Inc.	http://molcure.com/	Developed a high-performance antibody drug development platform "Abtrace" - allows pharmaceutical companies to achieve high-efficiency and high-speed screening for drug discovery purposes.	Medical/Healthcare, Biotech	AI, Medical Care, Drug Discovery, Pharmaceuticals, Operational Efficiency	No	2013	Not disclosed
57	Morpho, Inc.	https://www.morphoinc.com	Develops image/video related software for smartphones and other platforms specializing in image and video imagining technology. Uses deep learning and other AI technologies to provide image/video noise reduction and stabilization services, object tracking, detections services and other services.	Various	AI, Machine Learning, Deep Learning, Image Recognition/Diagnosis	Office in Korea and the US	2004	77
58	MUJIN Inc.	https://mujin.co.jp/en/	"Mujin Controller" - technology powered by AI that allows robots to perform multiple complex tasks	Robotics	AI, Industrial Robotics, Productions Systems	No	2011	68
59	Net Smile, Inc.	https://net-smile.jp/en/	Offers "AI Scan Robo" and "AI Automation Robo" - AI-powered tools improving business productivity.	AI assistants	AI, Machine Learning, Natural Language Processing, Chatbots, RPA, OCR, Operational Efficiency	No	2013	Not disclosed
60	Nextremer Co., Ltd.	http://www.nextremer.com/	An automated communication system "Minarai", that uses natural language processing and can be used in online chatbots or robot guides in retail stores. It also has an "A.I. Galleria" system that uses image recognition to identify people and adjust the topic of the conversation.	Retail	AI, Natural Language Processing, Communication/Voice Recognition, Interactive Systems, Operational Efficiency	No	2012	40
61	OPTiM Corporation	https://en.optim.co.jp/	Secure Mobile access and Sharing, Smart Agriculture using AI, IoT in partnership with SoftBank	IoT	AI, Machine Learning, Deep Learning, IoT, AI Monitoring Camera, Voice/Image Analytics, Real Time Monitoring, Business Efficiency	No	2000	182
62	otafuku lab, Inc.	https://otafuku-lab.co/	Provides AI, machine learning and big data services.	Medical/Healthcare	AI, Machine Learning, Deep Learning, Image Recognition, Big Data, Shogi, Mental Healthcare	No	2009	Not disclosed
63	Panair, Inc.	https://corp.panair.jp/	The company focuses on developing power supply and demand platform with AI and Big Data technologies.	Energy	AI, Big Data, Analytics	No	2012	35

64	PKSHA Technology	https://pkshatech.com/ja/	Develops algorithm-based products that deal with natural language communication & processing, customer services, and photo recognition, along with behavior prediction. Text Recognition Module - capable of recognizing and understanding natural language, HRUS - Image recognition using Deep Learning, BEDORE - Research on unstructured data retrieval by interactive interfaces using deep learning, CELLOR - CRM solution for Retail and B2C markets that uses machine learning, PREDICO - Customer behavior prediction tool that helps with the optimization of business operations	Various	AI, Machine Learning, Deep Learning, Natural Language Processing, Image Recognition/Analysis, Prediction and Forecasting, Big Data, Business Efficiency, Digital Marketing	No	2012	55 (Oct 2018)
65	PLAID, Inc.	https://plaid.co.jp	"KARTE" is a service that analyzes the behavior of users shopping on the website to provide them with a more personalized experience for a higher conversion rate.	Marketing/Digital Marketing	AI, Web Personalization, User Behavior Analysis, Digital Marketing	No	2011	Not disclosed
66	Preferred Networks, Inc.	https://www.preferred-networks.jp/ja/company	Deep learning technology with a focus on IoT. The company also promotes Edge Heavy Computing as a way to deal with large amounts of data generated by devices.	transportation, manufacturing and bio/healthcare	AI, Machine Learning, Deep Learning, Data Management, Traffic Systems, Manufacturing, Bio Healthcare	Office in California, US	2014	Japan - 140, US - 7
67	QueryEye Inc.	https://queryeye.jp	Provides various planning, research, and development services related to computer technology. "Zero" - AI solution that can automatically create text sentences and is capable of automatically writing of news articles.	AI assistants	AI, Machine Learning, Automatic Text Generation	No	2010	Not disclosed
68	Ridge-i Inc.	https://ridge-i.com/	Deep Learning focusing on image processing. Currently performing a project with NHK TV for B&W image coloring and object detection	Television	Deep Learning, Image Recognition	No	2016	16
69	ROBOT PAYMENT INC.	https://www.robotpayment.co.jp/	Online and offline payment services, such as "Billing Management Robo" - a cloud service that automates billing tasks.	Cloud services	AI, Machine Learning, Payment Services, Billing Management Systems, Cloud Services	No	2000	50
70	robot start inc.	https://robotstart.co.jp/	Development of communication robots, additionally offers development, consulting and marketing services related to robotics.	Robotics	AI, Robotics, Consulting, AI Speakers	No	2014	Not disclosed
71	Routrek Networks, Inc.	http://www.routrek.co.jp	Offers ZeRo.agri - a greenhouse farming system, that gathers and processes information from sunlight and soil sensors to automatically deliver an optimal set of irrigation & fertigation.	Agriculture, ICT	AI, Analytics	No	2005	Not disclosed
72	Scigineer Inc.	http://www.scigineer.co.jp/	Offers "Deqwas" - a personalized web marketing tool that analyses user's behavior and changes the displayed products and services on the page to represent what could be of the highest interest for a particular user resulting in a higher conversion and clickthrough rates.	Marketing/Digital Marketing	AI, Recommendation Engines, Personalization, Digital Marketing, Fashion, Apps	No	2005	29

73	Sciseed Inc.	http://www.sciseed.jp/index.html	Develops recruiting support services. "AI Chat Supporter" - enables users to create customer support chatbots for the chat service LINE.	AI assistants	AI, Machine Learning, Deep Learning, Natural Language Processing, Chatbots	No	2015	30
74	scouty Inc.	https://scouty.co.jp	Headhunting service for engineers, which uses AI to automatically match the engineer by his/her skills to the appropriate company.	Human Resources	AI, Analytics	No	2016	17
75	SELF Inc.	http://self.systems/	Offers a communication app "SELF", which adjusts to the user's interests and mental state by analyzing conversation with AI.	AI assistants	AI, Conversation /Voice Analysis, Communication Apps, Automatic Sales, Apps	No	2014	20
76	Seltech Corporation	https://seltech.co.jp/en/company	Developing a Connected Industry Platform using AI together with next-generation network security solutions. "FOXvisor" - an information security product. "VAIS" - an AI service	Security	AI, IoT, Voice/Image Recognition, Security, Smart Housing	No	2009	50
77	SENSY Inc.	https://sensy.ai	"SENSY" - personal AI platform. SENSY CLOSET - an AI-powered fashion recommendation service, SENSY MD - a demand forecast engine, SENSY BOT - a chatbot service.	Marketing/Digital Marketing	AI, Personal AI, Fashion, Apps	No	2011	Not disclosed
78	Shannon Lab	http://shannon-lab.co.jp	Provides various AI consulting services and solutions for automated text generation, sentiment analysis and other purposes.	Various	AI, Machine Learning, Deep Learning, Speech/Voice Analytics, AI Self-learning Systems, Speech Systems, Apps	No	2011	12
79	Smartmedical Corp.	https://smartmedical.jp/	Provides various medical services and tools for self-care. Empath - system that recognizes the mental state of users through voice analysis based on algorithms and can be used for mental training in sports or for stress checks.	Medical/Healthcare	AI, Voice/Emotion Recognition, Medical Care, Mental Health Care, ICT Selfcare	No	2010	Not disclosed
80	SmartNews, Inc.	https://www.smartnews.com/en/	A smartphone app that uses AI to automatically collates and organizes the latest news for each individual user.	Media	AI, Natural Language Processing, News, Media	Office in San Francisco and New York, US	2012	Not disclosed
81	So-net Media Networks Corp.	http://www.so-netmedia.jp/en/	Offers digital advertising systems powered by "VALIS-Engine" - So-net Media Network's AI engine that facilitates highly targeted ads through the company's digital ad management platform "LOGICAD".	Marketing/Digital Marketing	AI, Personalization, Digital Marketing, Digital Advertising	Yes - Taiwan	2000	139
82	Social Welfare Corporation Zenkougai	https://www.zenkougai.jp/english/	R&D of nursing solutions. Launched a "Nursing Robot and AI Research Lab" with the aim to research solutions using AI in the field of nursing care.	Medical/Healthcare	AI, Medical Care, Robotics, Nursing Care, Operational Efficiency	No	2005	423
83	SOINN Inc.	https://soinn.com	Developing a self-learning AGI-type artificial brain "SOINN" which is capable of automated classification or forecasting for automatic operation of various machines or devices.	Various	AI, Big Data Analytics, Artificial Brain	No	2014	Undisclosed
84	Spectee Inc.	https://www.spectee.co.jp	Provides an "SNS Flash News" service that allows the user to automatically monitor, analyze and categorize images and videos that have been uploaded to social networks around the world.	Media	AI, Image/Video Monitoring, SNS Automatic Analysis	Office in Germany, the US	2011	35

85	Studio Ousia Inc.	http://www.ousia.jp/en/	Engaged in technical development and practical applications using Natural Language Processing technologies. "QA ENGINE" - has advanced analytical capabilities and automatically can respond to questions from users. "Semantic Kernel" - can analyze various text contents and be used for contextual ad targeting or customer sentiment tracking.	AI assistants	AI, Natural Language Processing, Data Analysis, Sentence Analysis, SNS Analysis, Customer Support Data Analysis	No	2007	Undisclosed
86	Tagpic Inc.	https://tagpic.jp/	Offers "#CASPIC" - marketing support service that utilizes AI to automatically identify influencers on social media like Instagram, that are most suitable for a particular company or a certain brand.	Marketing/Digital Marketing	AI, Natural Language Processing, Model/Influencer Casting, Marketing Support	No	2015	60
87	Tecnos Data Science Engineering	https://www.tdse.jp	Provides consulting, analytics and engineering services. "Scorobo" - an AI-powered platform used for forecasting, client analysis, operation optimization, detection of anomalies in finance, marketing or manufacturing industries	Financial, marketing, manufacturing	AI, Machine Learning, Deep Learning, Data Analysis, Business Efficiency	Office in the US	2013	Undisclosed
88	Tifana.com Co., Ltd.	https://www.tifana.com/	Offers "AI Sakura" - an AI powered client service system operating as helpdesk for customer inquiries.	Various	AI, Machine Learning, Deep Learning, Automated Customer Service Systems, Natural Language Processing, Image/Voice/Emotion Recognition, Chatbots, Prediction and Forecasting	No	2000	60
89	Ubie, Inc.	https://www.companny.dr-ubie.com/en-jp	AI Monshin Ubie – an AI-driven medical inquiry SaaS, which uses natural language processing and question-setting algorithm to automatically create a template according to each patient's answers. Dr. Ubie - a disease prediction app, which leverages the knowledge of medical treatment (the knowledge acquired by the company's founder Dr. Yoshinori Abe in particular) and uses probability / statistical model and machine learning technology to assess the risk of future diseases.	Medical	AI, Natural Language Processing, machine learning	No	2017	Undisclosed
90	UEI Corporation	https://www.uei.co.jp/en/company/	Deep Learning consulting services (image classification, training, consulting and deep learning guidance)	Various	Deep Learning, Image Recognition	No	2003	20
91	Ultimate Research Institute, Inc	https://www.ultimate-souken.co.jp	Provides a portal site for apartment rentals. Uchikomi!kun AI - uses AI technology in order to match users with apartments that fits their preferences.	Real estate	AI, Real Estate, Rental Information, Apps	No	2012	Undisclosed
92	Unirobot Corporation	https://www.unirobot.com/	Offers a robot called "Unibo" that can communicate with its users, recognize individuals and hold information about their interests, perform video calling, control home appliances, etc.	AI assistants	AI, Social Robots, Face/Emotion Recognition	No	2014	15 (as of 2017)

93	Usagee Inc.	https://usagee.co.jp/index.html	Develops web services and other software. "Hissha no Kimochi kangaeru man" - draws conclusions from text using natural language processing technology. "Okyakkuma" - centralized management tool for customer and staff interactions.	AI assistants	AI, Machine Learning, Natural Language Processing, Image Recognition, Sentence Analysis	No	2006	20
94	User Local, Inc.	http://www.userlocal.jp	Specializes in development of web access analytics and social media analysis tools. Provides a variety of AI-powered services such as chatbots, forecasting, face recognition, etc.	AI assistants	AI, Chatbots, Access Analytics, SNS Analysis, User Behavior Analysis	No	2007	37
95	WACUL INC.	https://wacul.co.jp/	Offers a system that uses AI to analyze website access, suggests improvements and predicts the effect of suggested improvements	Marketing/Digital Marketing	AI, Analytics	No	2010	47
96	WealthNavi Inc.	https://www.wealthnavi.com	WealthNavi uses AI technology to automate and make asset management tasks more efficient and productive.	Financial	AI, Robotic Advisors, Finance, Asset Management	No	2015	Not disclosed
97	Weblio, Inc.	https://www.weblio-inc.jp	English dictionary applications, conversation, translation services and study abroad support. Offers an AI-powered "English Conversation Nana" app, that allows user to learn and practice conversational English without a teacher.	Education	AI, English Conversation, Dictionary, Apps	Office in the Philippines	2005	Not disclosed
98	xenodata lab.	https://www.xenodata-lab.com	Financial data analytics tool that leverages natural language processing (NLP) to analyze stocks and provide insights.	Financial	AI, Natural Language Processing	No	2016	17

ExportHelp

s-ge.com/exporthelp
exporthelp@s-ge.com
T 0844 811 812



Switzerland Global Enterprise
Stampfenbachstrasse 85
CH-8006 Zürich
T +41 44 365 51 51

Switzerland Global Enterprise
Corso Elvezia 16 – CP 5399
CH-6901 Lugano
T +41 91 601 86 86

Switzerland Global Enterprise
Avenue d'Ouchy 47 – CP 315
CH-1001 Lausanne
T +41 21 545 94 94

s-ge.com