中金投X
CHINA MONEY NETWORK

CHINA AI TOP 50

September 2018
chinamoneynetwork.com

INTRODUCTION

In the land that stakes its claim to inventions such as the compass, gunpowder, papermaking and printing, the Middle Kingdom's technological advancement continues to draw global attention. Chinese technology companies are today raising more venture capital than companies in any other country[1], while the number of registered Chinese new businesses tops the world[2]. And the largest herd of unicorns -- private companies worth US$1 billion and more -- resides in China[3].

China Money Network has a front row view of this continued growth. With our team located across Greater China, we have tracked tens of thousands of Chinese start-ups throughout their life cycles, from angel rounds to public listings. We have recorded the rise and fall of each VC fad and technological innovation. We've seen, first hand, the spectacular success of the star entrepreneurs and more often, the overlooked and silent failures of daring tech dreams.

Among the most noteworthy trends during the past couple of years is the rise of artificial intelligence. After bursting from the R&D labs and into popular culture in 2016, when Google's AlphaGo beat Korean professional Go player Lee Se-dol, AI has become the most important and disruptive force reshaping every sector, from education to mobility.

For the year 2017, Chinese AI start-ups raised US$27.7 billion via 369 VC deals. Chinese AI start-ups took a 70% and 31% share of global fundraising total and total deal volume[4], respectively. China's dominance in terms of VC fundraisings accelerated from 2013 until now, as

1 China Money Network: https://www.chinamoneynetwork.com/2018/05/04/chinas-venture-capital-market-tops-world-as-15-6b-deployed-in-april-alone
2 iResearch: China Co-Working Industry Research Report 2017
3 China Money Network: https://www.chinamoneynetwork.com/china-unicorn-ranking
4 Tsinghua University: China AI Development Report 2018

China's share rose from less than a third to over two-thirds of global totals.

As a result, Chinese AI companies have taken center stage globally during the current technology revolution, with opinions ranging from alarmism to extreme optimism. Yet, data and insights into the Chinese AI space remain limited. One example of this data disparity is seen in the large gaps that exist between different data sets. While one study puts the number of Chinese AI companies at 585[5], another says there are 4,040 such companies in China[6]. The difficulty partly rests in how artificial intelligence, itself, is defined. As part of our methodology mentioned below, China Money Network took a keen look at the definition of "artificial intelligence" as applied to these companies.

After releasing China's Top 10 AI companies in 2017[7], China Money Network is now releasing a ground-breaking study and ranking of China's top 50 AI companies. During months of thorough investigations, our team analyzed the data of over 1,000 Chinese companies claiming to provide AI-related technologies; interviewed a plethora of industry participants; and communicated with many of the world's top experts. We also visited dozens of companies and reviewed tomes of existing research and data.

The China AI Top 50 includes the 50 most successful Chinese AI start-ups with the greatest potential for future success. The list offers a unique perspective into China's AI industry by providing detailed company-level insights. This overview of the industry's pioneer companies will also give readers a more practical and realistic view of the Chinese AI sector.

METHODOLOGY

The China AI Top 50 ranking is produced with a weighted evaluation system and based on proprietary data China Money Network collected for this purpose.
First, for the purpose of this ranking, we narrowed our consideration to private companies with a core focus on AI technology research and development of related commercial products and services. We excluded public companies like voice recognition leader iFlytek and computer vision powerhouse Hikvision. We also excluded general technology giants that utilize AI, such as Alibaba, Tencent, Didi and Toutiao. Our approach to defining AI companies is very narrow,

5 The Universit of Oxford: Deciphering China's AI Dream
6 Beijing Municipal Commision of Economy and Information Technology: Beijing Artificial Intelligence Industry Development Whitepaper. http://jxw.beijing.gov.cn/docs/2018-07/20180702170625874148.pdf
7 China Money Network, 2017. https://www.chinamoneynetwork.com/2017/03/07/here-are-chinas-top-10-ai-companies-challenging-us-tech-leadership

as we wanted to focus on those start-ups that have AI at their core, and AI is central to their business missions. We also disregarded companies that claim to be AI companies but are in truth not.

We then collected company data via two methods. First, hundreds of companies completed an online questionnaire containing 27 questions and submitted the data to China Money Network. We combined this data with China Money Network's existing company databank from years of tracking China's VC deals on a daily basis. As a result, a total of over 1,000 Chinese AI companies were aggregated for consideration in the ranking.

A weighted evaluation system was utilized to give each company a score. The elements under consideration include 12 items across five areas: tech capability; maturity of products; fundraising; business fundamentals; and future potential. Specific items include number of patents; published research papers; VC fundraising; company valuation; revenue levels; and projections.

Based on the final scores, three rankings have been generated: China AI Top 10, China AI Top 20, and China AI Top 50. For each list, the companies are presented alphabetically. In other words, companies within each list are not further measured against each other.

This takes into consideration a couple of limitations during the evaluation process. First, despite taking a quantitative approach, there are many other elements that should be taken into account but are difficult to measure, such as a company's execution ability. Second, even though our data set is among the most comprehensive collected on China's AI industry, in cases when data was not available, we made best estimates based on our knowledge and available related facts.

Finally, many data points are based on company's own announcements. Chinese companies have a track record of exaggerating their financing levels and technological prowess. So we have worked through these announcements to balance potential fiction from verifiable claims.

So, while three rankings offer a look at the superstars in China's AI industry, the data is not sufficient to give a numerical order of each company's competitiveness. These rankings should be read with these caveats in mind.

CHINA AI TOP 10

Cambricon

Cloudwalk

DJI

Horizon Robotics

Megvii Technology

Mobvoi

SenseTime

Ubtech Robotics

Unisound

Yitu Technology

CHINA AI TOP 20

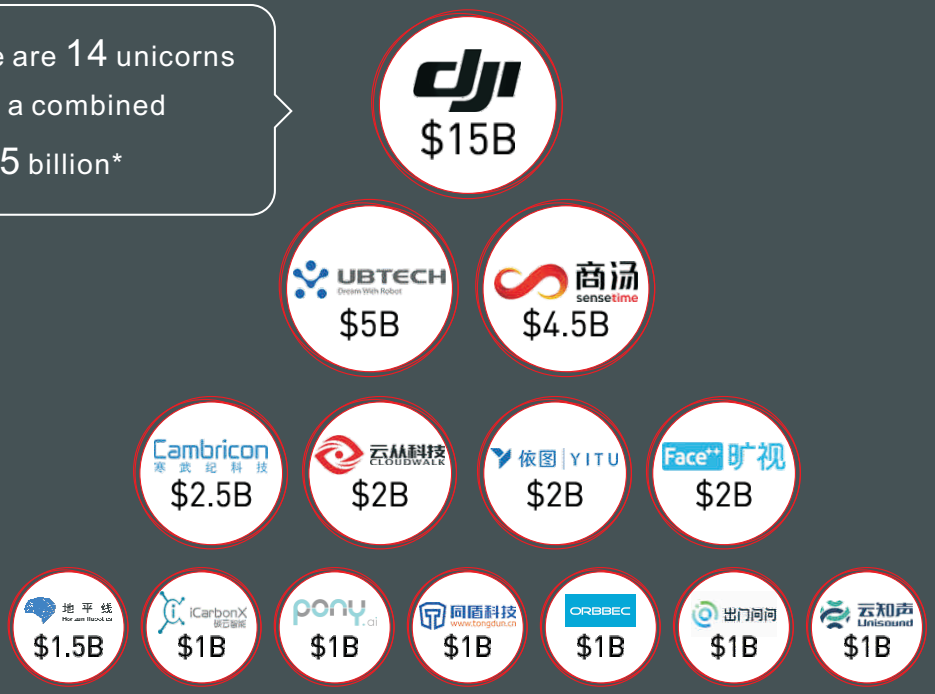
AISpeech
Cambricon
Cloudminds
Cloudwalk
DJI
Horizon Robotics
iCarbonX
LinkDoc
Megvii Technology
Mininglamp
Mobvoi
Moviebook
Orbbec
Pony.ai
Rokid
SenseTime
Tuya Smart
Ubtech Robotics
Unisound
Yitu Technology

CHINA AI TOP 50

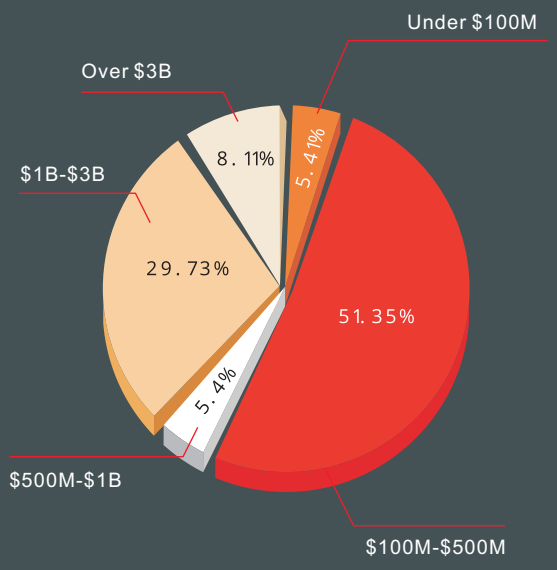
Aibee
AISpeech
Allcure Medical
Appier
Cambricon
Cloudminds
Cloudwalk
COWAROBOT
DeepGlint
Deepwise
DJI
Dorabot
Ehang
Fourth Paradigm
Geek+
Hiscene
Horizon Robotics
Huiyihuiying
iCarbonX
IceKredit
Infervision
Knowbox
LinkDoc
Malong Technologies
Megvii Technology
Mininglamp
Mobvoi
Momenta
Moviebook
Noitom
Orbbec
Pachira
Pony.ai
Quotient Kinematics Machine
Roadstar.ai
Rokid
Roobo
SenseTime
SensingTech
Slamtec
Terminus
ThinkForce
Tongdun
Turing Robot
Tusimple
Tuya Smart
Ubtech Robotics
Unisound
Xiaoi Robot
Yitu Technology

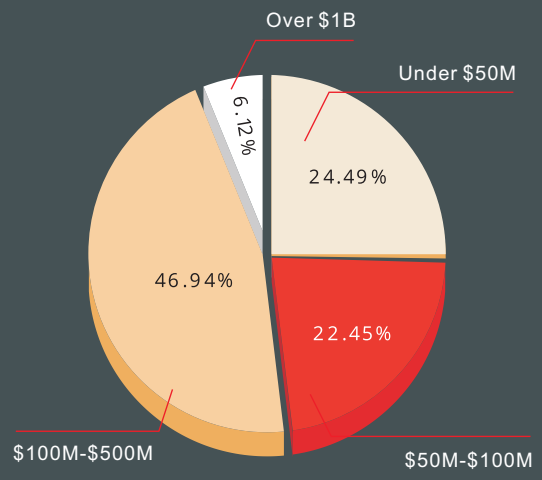
CHINA AI TOP 50

There are 14 unicorns worth a combined $40.5 billion*



*This is based on disclosed and estimated valuations.



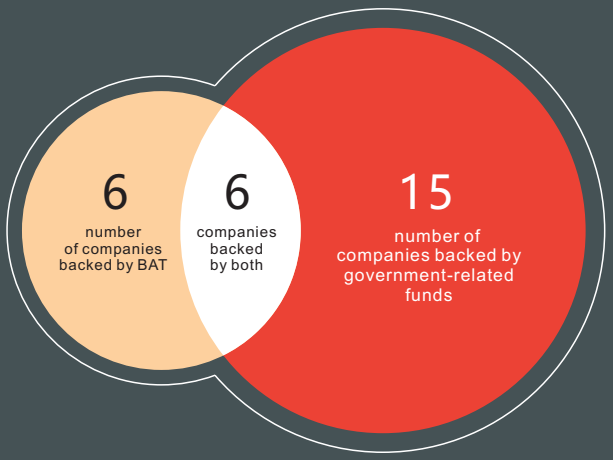


Around 37% of the companies with disclosed valuations are valued at $1B or more *

Over 6% of the 50 companies raised over $1B

*This chart is based on 37 companies with disclosed valuations.

27 of the 50 companies are backed by BAT or government related funds



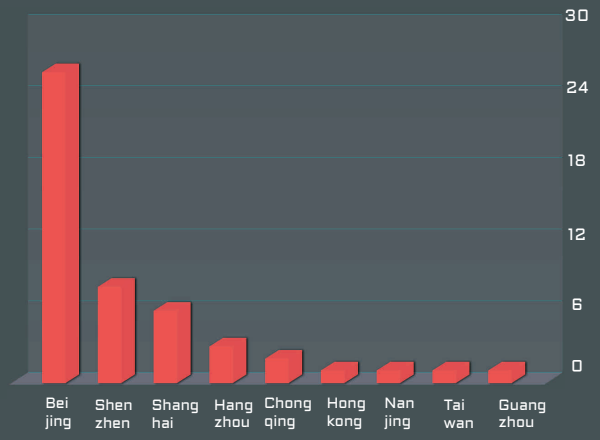
These are the most active investors of the China AI Top 50 companies

The major technology and industry focus areas of the 50 companies are listed below

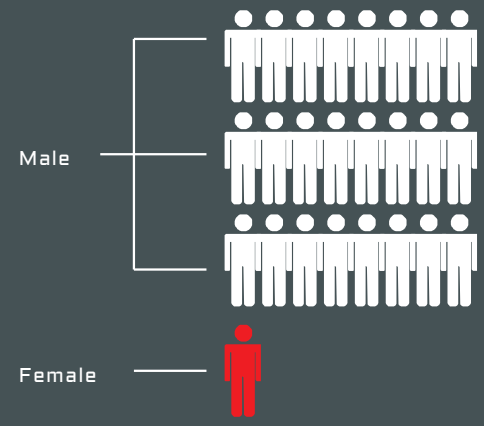
Computer Vision	Voice Recognition	Robotics	Autonomous Driving	AI Chips
云从科技 CLOUDWALK · 商汤 sensetime · Face++ 旷视 · 深鉴科技 DeepGlint · MALONG · 依图 YITU	思必驰 AISPEECH · Pachira 普强信息 · 云知声 Unisound · 出门问问	Geek+ 机器人智能物流专家 · DJI · roobo · EHANG 亿航 · dorabot · 李群自动化	MOMENTA · ROADSTAR.AI · COWA ROBOT · pony.ai · tusimple	Cambricon 寒武纪科技 · 地平线 Horizon Robotics · Think Force

Public Security	Healthcare	Financial Services	Education	IoT
云从科技 CLOUDWALK · 商汤 sensetime · 依图 YITU · 深鉴科技 DeepGlint · Face++ 旷视 · 明略数据 MININGLAMP · TERMINUS 特斯联	HY 汇医慧影 · 全域 ALLCURE · 深睿医疗 deepwise · 推想科技 infervision · 零氪科技 LinkDoo	Face++ 旷视 · 4Paradigm · 同盾科技 www.tongdun.cn · 明略数据 MININGLAMP	作业盒子	TERMINUS 特斯联 · tuya 涂鸦智能 · 云知声 Unisound

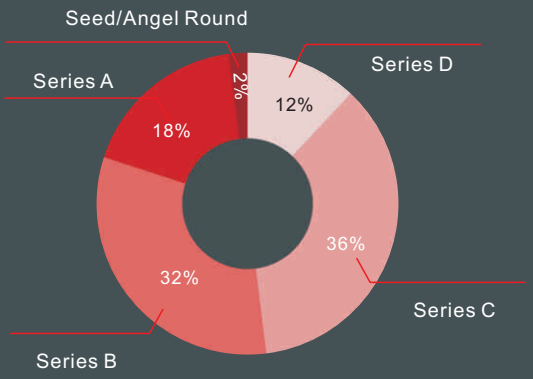
Shenzhen is home to more China AI Top 50 companies than Shanghai.



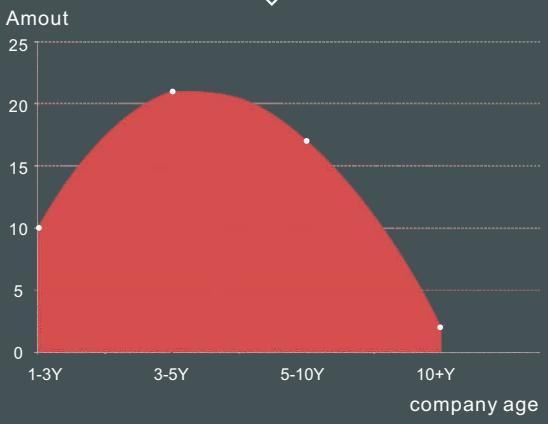
Out of the 50 companies, only 2 had female founders



Around 48% of the 50 companies have raised series C financing



The majority of the 50 companies are 1-5 years old



The founders of the 50 companies most frequentedly attended these universities and studied these subjects

55.6% of the founders have doctoral or postdoctoral degrees

Besides China's top AI companies, a wider look at China's AI sector presents a diverse range of opinions. Dr. Kai-Fu Lee, founder of Sinovation Ventures and Google China's ex-president, believes that "America today is ahead of the world in artificial intelligence, (but) China will take the lead in five years[8]." Some research reports state that the Chinese AI industry has "emerged as a major global contender in the field of AI,[9]" while others estimate that " China's AI capabilities are about half of those of America .[10]"

Besides mixed viewpoints, industry data also have significant inconsistencies and large swings. During a one-month period between June and July 2018, a report by Tsinghua University[11] reported there were 1,011 Chinese AI companies; while the Beijing Municipal Commission of Economy and Information Technology counted 4,040 AI companies in China[12].

Much of the challenge lies in how one defines what constitutes "an AI company," as the very term "artificial intelligence" has had different interpretations. A particular telling and open-ended definition is "AI is whatever machines haven't done yet".[13] Indeed, we have seen major breakthroughs in AI technology over the past half century that initially amazed the public but soon were considered "unimpressive.[14]" From international chess to the board game Go, AI reignited the public's enthusiasm each time it achieved something previously deemed impossible.

Nevertheless, the current boom in AI crystalized by the 2016 AlphaGo win against world champion Go player Lee Sedol is unprecedented in both scale and real-life impact. The total number of AI companies globally is believed to be anywhere from 3,465[15] to 4,925[16]. As many as 800 million workers globally are

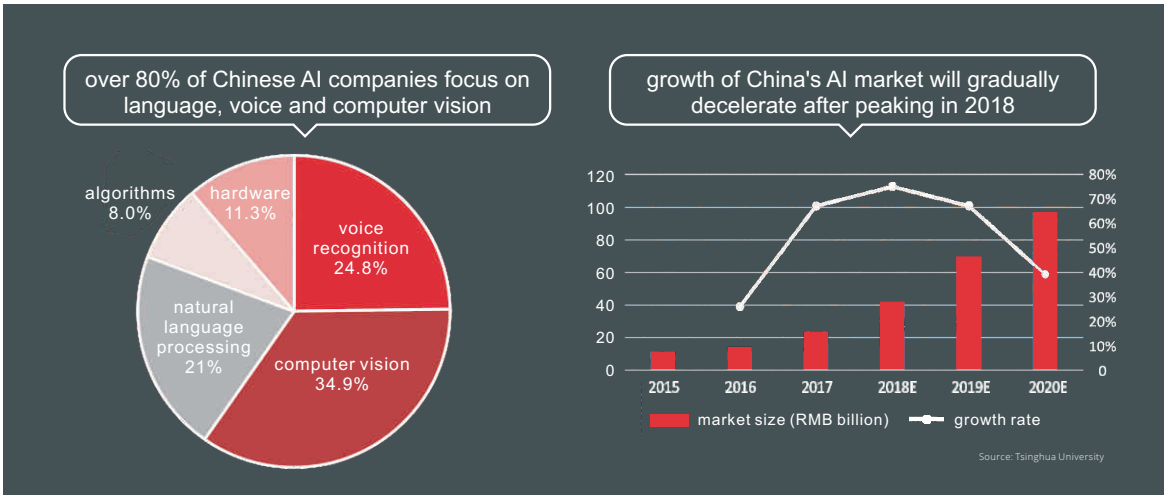
8 Dr. Kai-Fu Lee: keynote speech at the O'Reilly Artificial Intelligence Conference in San Francisco, Sep, 2018
9 Goldman Sachs: China's Rise In Artificial Intelligence: The New New China
10 The Universit of Oxford: Deciphering China's AI Dream
11 Tsinghua University: China AI Development Report 2018
12 Beijing Municipal Commission of Economy and Information Technology: China AI Industry Development Whitepaper 2018
13 Tesler's Theorem: https://plus.google.com/100656786406473859284/posts/Yp83aFwFJEr
14 Kai-Fu Lee: Artificial Intelligence. Cultural Development Press, 2017
15 Asgard & Roland Berger: Global Artificial Intelligence Landscape
16 Tsinghua University: China AI Development Report 2018

predicted to be replaced by robots by 2030[17]. Chatbots, one type of AI replacing call center staffers, could help cut business costs by over US$8 billion per year by 2022[18].

In China, the country's State Council declared that by 2030, the country will aim to have an AI industry whose core is as big as RMB1 trillion (US$146 billion). If counting periphery sectors, China's AI industry would be worth RMB10 trillion (US$1.46 trillion)[19] at that time. The official plan means the sector needs to grow 25 times from 2018 to 2030, because China's AI industry is estimated to be around RMB40.6 billion (US$5.9 billion) in 2018[20].

Outside of economic aspirations made by Beijing, industry experts are coming up with ways to quantify how AI will enhance the Chinese economy. One report estimates that AI has the potential to increase China's annual growth rate by 1.6 percentage points by 2035 in terms of gross value added[21]. For example, AI can create more than US$700 billion in additional gross valued added in 2035 for China's wholesale and retail sector. It can be achieved via automation to streamlining inventory and warehouse management, as well as adoption of augmented reality technology.

China's AI industry, despite being small at around US$5.9 billion in market size by year-end 2018[22], has been growing rapidly. The industry has more than doubled from 2015 to 2017. The annual



17 McKinsey & Company: https://www.mckinsey.com/featured-insights/future-of-organizations-and-work/Jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages

18 Juniper Research: https://www.juniperresearch.com/analystxpress/july-2017/chatbot-conversations-to-deliver-8bn-cost-saving

19 State Council Notice on the Issuance of the Next Generation Artificial Intelligence Development Plan. July 8, 2017.

20 CCID Consulting: 2017 Emerging Industry Investment Opportunities

21 Accenture: How Artificial Intelligence Can Drive China's Growth
CCID Consulting: 2017 Emerging Industry Investment Opportunities

growth rate is expected to peak at 75% in 2018, and will gradually decelerate to around 40% in 2020[23].

By another measure, Chinese AI companies are worth a lot more. During our research to compile China AI Top 50, we studied 1,122 Chinese companies using a narrow definition of AI[24]. The 1,122 companies have a combined valuation of US$66.3 billion. In that group, 14 companies are worth US$1 billion or more, with combined worth of US$40.5 billion[25]. This shows that investors are extremely optimistic about AI companies' potentials in the future. Of course, not all such optimisms are proven to be warranted eventually.

But one thing is clear: we are in the early stages of the current AI boom. Even though the biggest Chinese AI companies are frequently showcased in international media as signs of China's growing tech power, they are the outliers. Around 91% of the 1,122 companies we studied raised less than US$50 million, and 66% are valued under US$100 million. Around 81% of the companies only completed angel, seed or series A rounds. Moreover, 75% of the companies are less than 5 years old. This crop of new companies are mostly in the stage of finding ways to turn lab research into viable and sustainable businesses.

While statistics about the number of AI companies differ, conclusions made by both media and researchers tend to be uniform. There seems to be little debate that China's advantages are the scale of its data and pioneering applications of AI technologies in various industries. But China lags behind the United States in core technology innovation and AI infrastructure such as chips.

Our research confirms these findings. Only 3% of the 1,122 companies we studied are engaged in AI chips. Most companies we have talked to named weak AI fundamental research and infrastructure as among the industry's biggest failings. Moreover, a pervasive short-term thinking and a keen focus on pragmatism make future breakthroughs in these areas challenging. The

23 Tsinghua University: China AI Development Report 2018

24 China Money Network defines AI companies in this report as "private companies with a core focus on AI technology

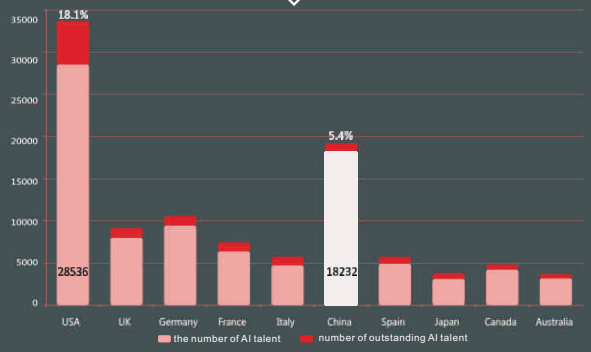
25 research and development and its related commercial products and services."
China Money Network: China AI 50

Only one Chinese institution is listed among the top 10 AI patent owners globally

Top 10 Global AI Patent Owners		
Rank	Company Name	Number of Patents
1	IBM	7276
2	Microsoft	5356
3	Samsung Electronics	5255
4	State Grid Corporation Of China	3794
5	Canon	3569
6	Sony	3090
7	NEC Corporation	2932
8	Fujitsu	2868
9	Google	2757
10	Mitsubishi Electric	2716

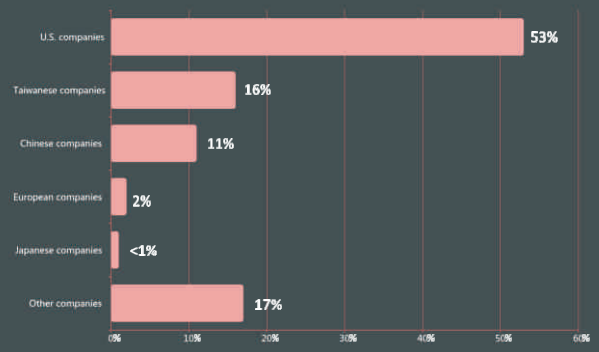
Source: China Institute for Science and Technology Policy at Tsinghua University

China has the second largest group of AI talent pool after the U.S, but only 5.4% of the Chinese AI talent pool are made of outstanding AI talent



Source: China Institute for Science and Technology Policy at Tsinghua University

Around 53% of global IC sales in 2017 were achieved by companies headquartered in the U.S.



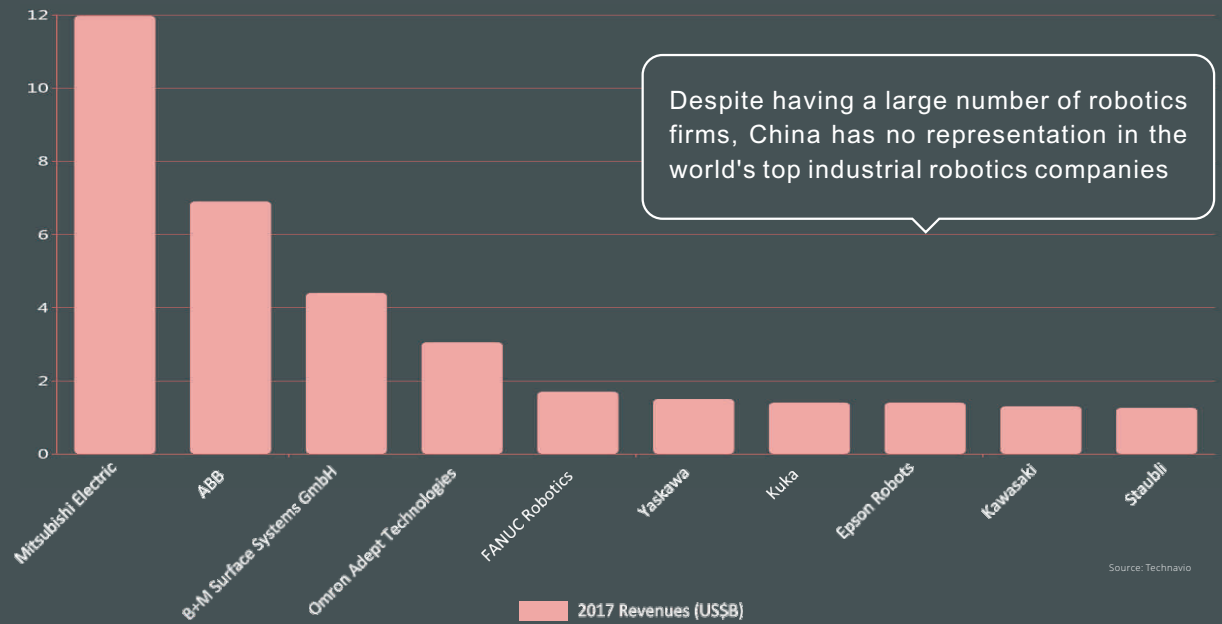
Source: IC Insights

The biggest global semiconductor vendors are mostly American companies

Top 10 Global Semiconductor Vendors Based On 2017 Revenues		
Rank	Company	Market Share
1	Samsung Electronics	14.6%
2	Intel	13.8%
3	SK Hynix	6.3%
4	Micron Technology	5.5%
5	Qualcomm	4.1%
6	Broadcom	3.7%
7	Texas Instruments	3.3%
8	Toshiba	3.1%
9	Western Digital	2.2%
10	NXP	2.1%
	Others	41.6%

Source: IC Insights

Top 10 Industrial Robotics Companies in the World



Source: Technavio

Despite having a large number of robotics firms, China has no representation in the world's top industrial robotics companies

semiconductor sector, for example, requires massive amounts of investment and an unwavering focus over the long term. If the government's powerful policy and capital support will be able to turn things around remains to be seen.

On the other hand, availability of data and generous official encouragement to broaden AI applications are named as key drivers of future development. China is estimated to possess 30% of the world's data by 2030.[26] Companies say they can obtain practical and real-life data from business partners after taking some consideration of user protections. A common way to achieve this is to anonymize user identification within the data set.

Strong government support gives Chinese AI companies additional fuel to move faster in applying AI technology in various sectors executions. For example, numerous specoal zones have been carved out by central and local governments in China and designated as testing ground for autonomous driving. These areas include the Xiong'an New Area, a major development hub near Beijing initiated by Chinese President Xi Jinping.

A Select List of Government Designated Testing Ground for Autonomous Driving in China

Name	Established in	Located in	Surface Area
Xiong'an New Area	April 2017	Baoding, Hebei province	Up to 2,000 km²
National Intelligent Transportation Comprehensive Test Base	August 2017	Wuxi, Jiangsu province	138,667 m²
National Intelligent Networked Automotive (Shanghai) Pilot Demonstration Park	June 2016	Shanghai	Up to 100 km²
Zhejiang Wuzhen Demonstration Zone and Yunqi Township	September 2015	Wuzhen, Zhejiang	3.5 km²
Chongqing i-VISTA Intelligent Vehicle Integrated System Test Area	November 2016	Chongqing	273,333 km²
National Intelligent Vehicle and Smart Transportation (Beijing-Hebei) Demonstration Zone	January 2016	Beijing, Hebei province	433,333 m²
National Intelligent Networking Automotive Application (Northern China) Demonstration Zone	November 2016	Changcun, Jilin province	100 km²
Wuhan "Smart Town"	November 2016	Wuhai , Hubei province	90 km²
Hunan Xiangjiang New District Intelligent Driving Test Area	September 2016	Shangsha, Hunan province	1.5 km²

[26] CCID Consulting: AI New Race – China 2017

Many local governments have launched "smart city" projects. As of June 2018, over RMB500 billion (US$73 billion) have been invested into these city-level projects[27]. In 2017, China's public security industry reached RMB620 billion (US$90 billion)[28], and AI is rapidly penetrating into this vast and lucrative sector. Public security means police department big data platforms, security hardware and tech solutions for governments, public spaces, transportation and private buildings. Facial recognition, vehicle recognition and other AI technology that helps to "generate" more intelligence from surveillance video content are among the fastest growing segments in China's AI space.

Finally, companies are aware of the danger of expectations getting ahead of what technology can deliver. The most frequently used words cited during our interviews to describe the current state of the Chinese AI sector include “crazy", "hot", and "expensive."

Many soon foresee a "correction" both in terms of the number of companies and their valuations. That will be beneficial to the industry's long-term prospects, they say. Most believe that AI will not fall into oblivion, as previously it did, this time around. The technology will have long-lasting impact on economies and societies going forward.

[27] AliCloud Research Center: City Brain Exploration "Digital Twin Cities" Whitepaper

[28] Qianzhan Industry Research Insititute: 2018-2023 China Intelligent Public Security Industry Forecast And Investment Strategy Analysis Report

01

AIBEE

New AI star firm with deep tech and commercial connections

Founded in:	2017
Founders:	Lin Yuanqing
Headquarters:	Beijing
Total fundraising:	Approximately US$40 million
Valuation:	Undisclosed
Select investors:	Adrian Cheng Chi-Kong, Kinzon Investment, Zhen Fund

Aibee seems to be winning right from the starting line. Founded at the end of 2017 by Dr. Lin Yuanqing, former head of Baidu Research, the up-and-coming new AI star company has put together a strong team and won strong investor support during its first year.

Lin, a PhD graduate in electrical engineering from the University of Pennsylvania and a Tsinghua University graduate, joins with Dr. Silvio Savarese in founding Aibee. Dr. Savarese is an associate professor of computer science at Stanford University, and is married to Li Fei-fei, a prominent AI figure in China having served as chief scientist of AI/machine learning of Google Cloud.

In May 2018, Aibee said it had received an investment from Adrian Cheng Chi-Kong, the third generation heir to Hong Kong's Cheng Yu-Tung family, whose net worth is estimated to be around US$17 billion. Adrian Cheng plans to utilize Aibee's technology to improve efficiencies in his K11 art-themed shopping malls in Greater China, and perhaps at the family's other assets including thousands of jewelry stores and dozens of malls in the next few years.

Aibee's mission is to provide industry-tailored AI solutions encompassing all technology areas from computer vision, voice recognition, natural language processing, big data-based recommendation and projections. This approach is based on Lin's belief that enterprises need one-stop solutions when looking to incorporate AI technology across business operations. The company will first test this method in retail, then expand to other industries.

02

ALLCURE MEDICAL

Using AI to improve cancer treatment in China

Founded in:	2015
Founders:	Chen Zheng
Headquarters:	Beijing
Total fundraising:	Approximately US$138 million
Valuation:	Undisclosed
Select investors:	CICC, China Health Industry Investment Fund, Lotus Venture Capital

Even though Allcure Medical was founded by changing its corporate name to the current form in 2015, the company was in the making during the previous decade. Founder Chen Zheng, who graduated from the department of military medicine at Guangzhou First Military Medical University, has been working in cancer treatment ever since. He founded Concord Medical Services Holdings and brought the radiotherapy and diagnostic imaging center operator to a U.S. listing in 2009.

Allcure Medical is where Chen hopes to combine his deep medical experience with new technology. The company develops a cloud-based cancer treatment system powered by big data and AI. It allows doctors in China's small cities and townships, where expertise is lacking, to upload patients' data and get automatically generated treatment recommendations. During the radiotherapy process, doctors can also consult the cloud platform to improve treatment effectiveness. This system has been deployed in 21 provinces and nearly 100 hospitals in China.

In order to continue improving its system, Allcure Medical partners with many agencies to collect and analyze massive amounts of health data. It plans to build more independent cancer image diagnosis centers and deepen the usage of AI technology in its radiotherapy planning systems in the future.

03

AISPEECH

A decade devoted to enabling voice-based man-machine interaction

Founded in:	2007
Founders:	Gao Shixing
Headquarters:	Suzhou
Total fundraising:	Approximately US$120 million
Valuation:	Undisclosed
Select investors:	Alibaba, Foxconn, DCM China, Oriza Holdings

Founded by a pair of graduates from the University of Cambridge, AISpeech paid some price for being too early. The company, led by a Cambridge business school graduate Gao Shixing, spent the first few years trying to figure out how to commercialize voice technology, the research topic of the other Cambridge graduate majoring in engineering, Yu Kai.

AISpeech attempted to make an education tool, a voice assistant, but eventually found viable markets in which peers are busy cultivating as well. These include smart cars, smart home services and smart robotics. The popularity of smart speakers proved beneficial to AISpeech, as numerous Chinese smart speaker makers, including Alibaba, Xiaomi and Tencent, turned to AISpeech for its voice interaction solutions. In order to help more industries add "ears and mouths" to their devices, AISpeech launched a voice recognition platform DUI to provide full voice capabilities to enterprises. Its other products include man-machine dialogue operating systems and AI chip modules.

The latest move by the company is announcing a partnership with an undisclosed chip company to set up a joint venture to make AI chips customized for intelligent voice interactions. It is also exploring opportunities in enterprise-facing smart services space, helping businesses to add voice capabilities.

To achieve that, AISpeech is focused on enhancing its research via partnering with Shanghai Jiao Tong University and Suzhou city government to set up AI labs. It has also established its own investment fund to invest in related start-ups to stay on top of emerging new tech.

04

APPIER

AI-powered cross screen solutions provider

Founded in:	2012
Founders:	Yu Chih-Han
Headquarters:	Taipei
Total fundraising:	Approximately US$82 million
Valuation:	Undisclosed
Select investors:	Softbank, LINE, Sequoia Capital, EDBI, UOB Venture Management

It was after much trial and error that Appier's founders identified a viable business idea that later became Appier. Yu Chih-Han and Joe Su, two Harvard graduates, started their entrepreneurial career at an apartment close to campus. They produced a number of products, including a virtual gaming character with AI capabilities, but none made much progress. In 2010, the pair decided to focus on cross screen technology, seeing the strong demand for gaming, ads and e-commerce as mobile Internet emerged. Two years later, Appier was born.

Having worked on Stanford's DARPA Challenge, Yu has expertise in AI. Su, a nationally ranked programmer in Taiwan while in high school, is good at building large-scale systems. Combining the pair's strengthen, Appier developed one of the earliest cross screen technology solutions in Asia.

Its products allow advertisers to integrate device-specific marketing efforts into a single cross-screen campaign. Appier's systems study user behavior to identify relationships between devices and users, and then model user habits to provide insights and predictions to advertisers. For example, Appier claims to have helped Carrefour in Taiwan increase their Web-based click-through rate by 87% using its cross screen solution compared to single screen ad campaigns.

Going forward, Appier is deepening its expansion in Asia. It is also seeking to expand applications in more sectors, including financial services, healthcare and manufacturing.

05

Cambricon 寒武纪科技

CAMBRICON

China's state-backed semiconductor champion and leader in AI chips

Founded in:	2016
Founders:	Chen Tianshi, Chen Yunji
Headquarters:	Beijing
Total fundraising:	undisclosed
Valuation:	approximately US$2.5 billion
Select investors:	China State-Owned Capital VC Fund, SDIC Venture Capital Management, CAS Investment Management, Alibaba Innovation Ventures, iFlytek

Cambricon Technologies Corp Ltd. was founded in 2016 by a group of researchers at the Institute of Computing Technology, Chinese Academy of Sciences, China's top research institution. The co-founders are two gifted brothers, Chen Yunji and Chen Tianshi, who obtained their PhD degrees in computer science and computer theory at the age of 24 and 25, respectively.

In 2014, the brothers teamed up with other researchers to publish two highly influential research papers on deep learning processor architecture and new designs of an accelerator for large-scale convolutional and deep neural networks. The year after, the team was among the earliest globally to have developed a deep learning dedicated processor prototype chip. In 2016, Cambricon was officially established with angel backing from Chinese voice recognition giant iFlytek and other Chinese investors. In 2017, Chinese Academy of Sciences also appropriated RMB10 million to support Cambricon's research.

Thereafter, Cambricon went on to release a number of key products including Cambricon 1A and 1H series chips specially designed for deep learning processing. The chips were used by smartphone maker Huawei's Mate 10, P20 and Honor phones. In May 2018, Cambricon released 1M chip and MLU100, its first chip for cloud computing. The 1M chip has TSMC 7nm technology and provides efficiency of 5 TOPS/Watt for 8-bit computing. "We hope to take 30% market share of China's high-performance smart chip market and to have one billion smart devices worldwide integrating Cambricon's processors in three years," Chen Tianshi told Xinhua News in 2018.

As the earliest and best team developing chips in China, Cambricon has received strong government support. Its series A and B rounds were both led by Chinese Central Government-level investment funds. The company is clearly a leader in the Chinese chips space, and carries on its shoulders the hope of achieving China's self-sufficiency in chips.

06

CLOUDMINDS

Building cloud-based AI via leveraging telecom expertise

Founded in:	2015
Founders:	Huang Xiaoqing
Headquarters:	Beijing
Total fundraising:	Approximately US$130 million
Valuation:	Undisclosed
Select investors:	Softbank Corp, Foxconn, Shenzhen Capital Group

A company's genetic makeup lies deeply in its founder. For Cloudminds, a start-up wanting to build a cloud-based AI system for everything, its founder Huang Xiaoqing's deep telecommunications background is embodied everywhere from its official statements to its product lineup.

Huang had over 20 years of telecommunications work experience before founding Cloudminds in 2015 in his 50s. Having worked at telecommunications firm UTStarcom for over 10 years and after a stint at China Mobile, Huang founded Cloudminds to create a cloud-based super brain that will have unlimited applications. Softbank, an old connection for Huang, backed the company from the start.

Much of its products have strong telecommunication elements. For example, it is building a high-speed secure Internet for special applications. Its dual-chip and dual-OS smartphone product has been used by government agencies such as the police force because of its high level of security. It also has launched consumer products, including a GPS helmet that can guide the blind to navigate with voice instructions. Though the helmet still appears to be years away from commercialization.

In May 2018, Cloudminds jumped on the blockchain bandwagon, partnering with Softbank to jointly develop a blockchain identification solution.

07

CLOUDWALK

Leading facial recognition solution provider with strong government ties

Founded in:	2015
Founders:	Zhou Xi
Headquarters:	Guangzhou
Total fundraising:	Undisclosed
Valuation:	Approximately US$2 billion
Select investors:	Shunwei Capital, Oriza Holdings, Puhua Capital

Cloudwalk is another AI start-up incubated in the Chinese Academy of Sciences (CAS) system. Founder Zhou Xi is a PhD graduate of the University of Illinois Urbana-Champaign with a research focus on computer vision. He joined the Chongqing research institute of CAS and then established Cloudwalk in 2015 to turn research ideas into viable businesses.

Cloudwalk began its commercial journey from supplying facial recognition technology solutions to a unit of Chinese border control. It then helped Guangdong province's public security bureau to catch suspects on the run using facial recognition. As of March 2018, a total of 24 provinces in China utilize public security solutions powered by Cloudwalk. The company also provides facial recognition solutions at airports.

Another area Cloudwalk found viable customers is in banking. With its connection to CAS and the team's early start, Cloudwalk was able to provide facial recognition to nearly 100 large-scale banks in China.

More importantly, Cloudwalk was tasked to help build two projects for China's National Development and Reform Commission: "Artificial Intelligence Infrastructure Public Service Platform" and "Facial Recognition System Industrial Application Platform". The Guangzhou city government has also provided generous financial and policy support to the company, giving it advantages in obtaining government-related projects.

Cloudwalk Research Institute fuels the company's product development and currently focuses on researching pioneer AI algorithms and exploring new tech areas such as 3D face recognition and Person Re-Identification.

08

COWAROBOT

Low-speed autonomous driving firm focused on commercialization

Founded in:	2015
Founders:	He Tao
Headquarters:	Wuhu
Total fundraising:	Approximately US$28 million
Valuation:	Undisclosed
Select investors:	SB China Venture Capital, China Creation Ventures

With ten years of experience in autonomous driving algorithm research and system development, He Tao has strong conviction. CowaRobot, the company he founded, should find areas where commercialization is technologically ready. With self-driving technology years away from being used in real-life situations, CowaRobot is taking a different path: focusing on low-speed self-driving in controlled environments with a clear business rationale.

A PhD graduate from Tokyo Institute of Technology with a focus on environmental awareness for self-driving, He worked at Shanghai Jiaotong University after graduation. But seeing his research turn into life-changing products is what really excites him. Initially, CowaRobot tried to build a smart suitcase that follows its owner around automatically. The product, despite its "wow" factor, had uncertain business potential.

Next, CowaRobot launched a low speed, intelligent city street cleaning robot. The robot is made with China's largest sanitation machinery maker Zoomlion Enviornment. CowaRobot provided the software and hardware enabling autonomous driving for the vehicle. As cities big and small in China are eager to experiment cool and techy products, the product secured a number of buyers across several provinces. One of which is a scenic park in Changsha made famous by a poem by Chairman Mao Zedong.

Next, CowaRobot plans to expand to logistics and machinery sectors. In logistics, it may consider making robots for product loading, sorting and packaging at warehouses. It may also consider producing more consumer products.

09

DEEPGLINT
格 灵 深 瞳

DEEPGLINT

A computer vision company coming back to prominence

Founded in:	2013
Founders:	Zhao Yong, He Bofei
Headquarters:	Beijing
Total fundraising:	Undisclosed
Valuation:	Undisclosed
Select investors:	Sequoia Capital, Zhen Fund, Ceyuan Ventures

After suffering a major management shakeup, Chinese computer vision company DeepGlint seems to be on the mend.

Two co-founders, Zhao Yong and He Bofei, agreed to part ways in January 2017. Former CEO He Bofei, a Stanford business school graduate, departed. Former CTO and chairman Zhao Yong, a PhD graduate of Brown University with a focus on computer vision and computational photography, stayed on to serve as chairman and CEO. Zhao was a senior researcher at Google and was the earliest member of the Google Glass project. At the same time, Deng Yafeng, who was at Baidu's deep learning institute leading projects on facial recognition, joined as co-founder. Thus, the company was back on the path for growth.

The episode came with great price. As peers raised massive VC financing and took market share of the lucrative "public security" pie, DeepGlint's prospects lagged. But the company celebrated in August 2018 when it won a significant public security contract from Bank of Agriculture to supply smart video cameras, facial recognition equipment and 3D image analysis devices. This type of win, however, is something DeepGlint's bigger rivals are achieving much more frequently.

But with a stable management team, it is rapidly catching up. It has a partnership with Hyundai to supply its intelligent HD cameras. It is working with Chinese retailers to widen the use of biometrics payment methods. Going forward, DeepGlint wants to expand its market share in the public security market, while exploring new areas including intelligent transportation, driverless cars, robotics and medical imaging.

10

DEEPWISE

Early screening via AI-powered medical imaging analysis

Founded in:	2017
Founders:	Lei Ming, Qiao Xin
Headquarters:	Beijing
Total fundraising:	approximately $45 million
Valuation:	Undisclosed
Select investors:	Legend Capital, Legend Star, Kinzon Capital, Danhua Capital

Deepwise was founded in early 2017 by several experienced medical and tech experts. Chairman Lei Ming is a computer science graduate from Peking University and worked at Baidu before founding two successful tech companies. CEO Qiao Xin was a VP in Greater China for Siemens Healthineers, one of three foreign companies taking around 90% to 100% of the high-end medical equipment market in China.

The pair founded Deepwise after seeing the great potential of combining AI with medical imaging. The star team was able to secure VC funding in the beginning, and soon released a beta lung nodule early screening product that is being tested in a dozen hospitals. But it was not smooth sailing all the way. The team had to re-do data marking and re-train their data many times in order to secure stable results. It also had to find solutions to produce a method that is compatible with different standards of medical imaging from different medical equipment makers. But the company claims its lung nodule screening product was able to achieve sensitivity and specificity of 98.6% and 92.9%, respectively.

Deepwise wants to help hospitals in China's small cities to better detect and screen diseases early. It also wishes to help the biggest public hospitals, from which cancer patients from across the country are seeking treatment, to better handle complex cases with its AI tools. The company will explore other areas of business including general consultation, medical record data mining and surgical intelligent navigation. It plans to expand in the North American market as well.

11

DJI

A global drone powerhouse appearing to be "All In AI"

Founded in:	2006
Founders:	Frank Wang
Headquarters:	Shenzhen
Total fundraising:	Undisclosed
Valuation:	Approximately US$15 billion
Select investors:	Sequoia Capital China, New Horizon Capital, Maison Capital

DJI is known around the world as the dominant consumer drone maker with annual revenue reaching billions of U.S. dollars, but its ambitions in AI is no less grand.

Founded in 2006 by Frank Wang, a Hong Kong University of Science and Technology graduate, DJI drove the growth of the consumer drone market while achieving great commercial success as the top retailer of reliable and economically priced consumer drones.

Much of DJI's technology research areas overlap that of AI and robotics, such as computer vision and sensor technology. DJI's Phantom 4 drone utilizes image recognition to avoid and track objects. The Mavic Pro can take gesture commands and map the environment based on image recognition and deep learning.

In May 2018, DJI partnered with Microsoft to build an SDK to allow drones stream real-time video to a computer, which will analyze and interpret the footage. This allows industrial applications such as spotting anomalies in pipes or power lines.

In addition to years of rumors that DJI may be developing its own autonomous driving operations, there are signs that the drone powerhouse is implementing an "All In AI" strategy. Potential areas DJI may enter include advanced manufacturing, robotics and AI chips based on its accumulated technology and know-how in computer vision and AI algorithms.

12

DORABOT

Making robots to fully automate the entire logistics process

Founded in:	2015
Founders:	Deng Xiaobai
Headquarters:	Shenzhen
Total fundraising:	approximately $45 million
Valuation:	Undisclosed
Select investors:	Yunfeng Capital, GP Capital, Sinovation Ventures, Hongtai Capital

Founded by a group of hackers and makers, Dorabot has an eclectic feel that is rare among Chinese AI companies. Its open, lab-like office with a multinational staff, coupled with an atmosphere to encourage out-of-the-box thinking makes it look like a start-up more commonly seen in Silicon Valley.

The company's Chinese name, which literally means "Blue Fat Robot", is a play on founder Deng Xiaobai, whose first name means "Little White." A veteran logistics manager with years of experience working at international logistics giant UPS, Deng's childhood dream was to create logistic robots after interning as a delivery boy at the age of 12 and seeing how inefficient the process was. He was joined with two other co-founders with engineering and robotic expertise to make Dorabot a start-up to revolutionize how logistics are executed.

Consistent with its culture, Dorabot decided to take a different approach from Kiva Systems, the mobile robotic fulfillment systems bought by Amazon. As many Chinese start-ups simply copy Kiva's product design, Dorabot instead spent months researching at warehouses and logistics companies to find a better solution. Its conclusion is a more nimble system that can grab individual objects, instead of Kiva's system that moves around a whole shelf at one time.

This will of course be more challenging to achieve, and Dorabot is taking a step-by-step approach. It has a customizable wheeled robot with a programmable arm suitable for research and education, and a robotic hand that grasps objects that can be easily integrated with hardware systems. Next, it wants to partner with logistics companies to test its systems for full deployment.

13

EHANG | 亿航

EHANG

Dreamer of autonomous aerial vehicles for futuristic travel

Founded in:	2013
Founders:	Hu Zhihua
Headquarters:	Guangzhou
Total fundraising:	approximately $52 million
Valuation:	Undisclosed
Select investors:	GGV Capital, GP Capital

Controversy has accompanied much of Ehang's existence. The company was founded in 2013 by Hu Zhihua, a Tsinghua computer science graduate and a diehard model airplane hobbyist. From the beginning, the company chose to do things differently. It first released a consumer drone that used mobile apps for control, instead of a traditional console. Feeling the pressure from dominate players, it turned to making manned drones for short-term travel, a segment few start-ups dared to challenge.

Ehang took a few years to release footage of its CEO taking a flight inside its Ehang 184 AAV, a low altitude autonomous aerial vehicle for medium and short distance travel. But with a range of around 10 miles, which means around 23 minutes of fly time, the product is still years – if not decades – away from commercialization. Because its performance and safety standards are still secondary to an American peer, Ehang was replaced as the partner helping the Dubai government test an air taxi project.

But slowly, Ehang is forging ahead. Ehang 184 has become a pilot project of the Civil Aviation Administration of China, which is giving the company permission to conduct tests in Chinese airspace. It is seeking ways to generate revenue to support its on-going operations. One lucrative business is performance drones. Leveraging founder Hu's experience managing emergency dispatch and control systems for large scale events including the Beijing Olympics, Ehang has been providing performance drone services that are reportedly bringing significant income. The company deploys hundreds and sometimes over 1,000 drones in the air to form images and words that are fun to watch. Ehang is also seeking ways to commercialize delivery drones that can deliver light goods.

But the ultimate dream for Ehang and Hu is to fly humans at low altitudes from 500 to 1,000 meters. It has already accumulated rich experience in managing control centers for large numbers of drones in the air. Next, Ehang wants to work with the Chinese government closely in making the sci-fi movie scenes of its dreams come true.

14

FOURTH PARADIGM

Building an AI platform for everyone, starting with big banks

Founded in:	2015
Founders:	Dai Wenyuan
Headquarters:	Beijing
Total fundraising:	Undisclosed
Valuation:	Undisclosed
Select investors:	ICBC, Bank of China, China Construction Bank, Sequoia Capital, Sinovation Ventures

A company's DNA can always be best traced to its founder's experience and vision. Dai Wenyuan, founder of Fourth Paradigm, headed the team refining and maximizing Baidu's search ad revenue in the early 2010s. By one account, the team's algorithms helped drive Baidu's revenues up by eight times in a period of four years. That experience of making real world returns via technology led Dai to focus on creating a universal AI tool for enterprises when he founded Fourth Paradigm in 2015.

Thus, the company's vision is to enable a world where "AI is for everyone," as its slogan states. In another word, creating a "brain" that can power all businesses across sectors to harvest the benefits of AI. This brain comes in the form of a SaaS product, which companies can plug into to make better predictions. For example, Fourth Paradigm's tools enabled China Merchants Bank's credit card unit to increase its earnings by 60% by more precisely targeting those cardholders who are likely to generate higher revenue for the bank by selecting installment payments.

Even though the company's vision is to empower every industry, it has accumulated its greatest experience in the banking sector. Three of China's national "Big Four" banks have invested in the company as strategic investors. That is because Fourth Paradigm's solutions let banks enhance their AI capabilities in an all-round and coordinated fashion. By comparison, some AI companies only help banks to "see" or "hear" their users. Based on its AI platform, Fourth Paradigm can also help banks create customized applications from anti-fraud tools, risk pricing suggestions and chatbots.

Looking ahead, the company will continue to refine its AI platform and cultivate more industry verticals outside of banking. Its dream is to lower the technical barriers of utilizing AI so that anyone – even those without any background in technology – can implement AI tools to improve efficiencies.

15

GEEK+

Mobile robotic fulfillment systems saving costs for warehouses

Founded in:	2015
Founders:	Zhen Yong
Headquarters:	Beijing
Total fundraising:	over US$70 million
Valuation:	Undisclosed
Select investors:	Warburg Pincus, Vertex Ventures China

Geek+ started inside the study halls of Tsinghua University in Beijing, where three computer and engineering alums spent nearly a year to produce a logistics robot prototype, which later became Geek+. Led by Zhen Yong, who graduated from Tsinghua majoring in industrial engineering, the company was founded to produce something like Kiva, the mobile robotic fulfillment systems later bought by Amazon.

Zhen, having worked at ABB and Chinese private equity firm New Horizon Capital, intuitively saw the great business potential of catering to the rising demand of e-commerce firms in China. Geek+ makes automated storage and retrieval systems that can cut labor costs and improve efficiency. In addition, the company develops automatic handling and sorting systems that can further improve efficiency throughout the whole process of fulfilling online orders.

Geek+ has deployed thousands of its robots to e-commerce firms including JD.com, as well as express delivery firms, online pharmacies, supermarkets and third-party logistics companies. Its clients also go beyond the Chinese border, with the company having helped a Japanese third-party logistics company to increase efficiency by as much as four times before deploying its robotic systems.

As the company's products mature, Geek+ plans to increase deployment and to expand overseas. It is also researching smart forklifts and robotic arms; robot navigation and control; and large warehouse management systems.

16

HISCENE

China's AR glasses maker and AR solution provider

Founded in:	2012
Founders:	Liao Chunyuan
Headquarters:	Shanghai
Total fundraising:	Undisclosed
Valuation:	Undisclosed
Select investors:	Meitu Inc., GGV Capital, Suodao Capital

Named after a great mountain in his hometown in Yunnan province, Liao sees great parallel between his childhood and the company he is building. Requiring a full day and night of climbing to see the most beautiful sunrise at the peak the next morning, climbing the mountain requires time, patience and persistence. Achieving his professional goal, Liao believes, would take nothing less.

A Tsinghua University graduate and a PhD in computer science from the University of Maryland, Liao founded HiScene to develop augmented reality solutions and improve man-machine interactions via augmented reality technology. In the past few years, HiScene first released a HiAR SDK to let developers build cross-platform AR apps and AR games. It then unveiled a self-developed pair of AR glasses, HiAR G100, priced at RMB16,998 (US$2,490). Other offerings include a communication and collaboration tool built for AR terminals, and a cloud API system for developers.

Realizing the uncertain prospect of consumers buying HiScene's pricy AR glasses, the company is targeting enterprises buyers. It hopes advanced manufacturers can use its AR glasses to improve the efficiency of staff training and mechanical repairs. The company is also providing its AR technology to help companies design AR-themed marketing campaigns. It assisted Tencent, Starbucks and Alibaba with some of their AR projects, including marketing based on AR pets.

17

地 平 线
Horizon Robotics

HORIZON ROBOTICS

AI chip and algorithm platform dreaming to power hundreds of millions of smart devices

Founded in:	2015
Founders:	Yu Kai
Headquarters:	Beijing
Total fundraising:	over US$100 million
Valuation:	over US$1.5 billion
Select investors:	Hillhouse Capital, Intel Capital, Sequoia Capital

Horizon Robotics was founded by Dr. Yu Kai, founder of Baidu's Institute of Deep Learning, in 2015. With a team of deep learning scientists led by Dr. Yu who previously worked at Siemens Corporation and NEC Labs America, Horizon Robotics secured top investors including Sequoia and Hillhouse at the time of its establishment.

Different from most Chinese AI start-ups, Horizon Robotics set its eyes on a less traveled and more challenging path: developing an all-encompassing platform combining hardware, software and the cloud to power smart devices from autonomous driving vehicles to surveillance cameras.

It took the company almost two years to release its first series of products at the end of 2017: its independently-designed and developed AI processor architecture BPU (Brain Processing Unit), and two AI processors, Sunrise 1.0 and Journey 1.0.

Sunrise 1.0 enables face recognition and tracking of high-performance surveillance video analytics in scenarios including smart cities. Journey 1.0 powers real-time detection and recognition of objects including pedestrians and vehicles suitable for autonomous driving application.

Going forward, Horizon Robotics is focused on developing tailor-made and ready-to-use AI hardware and software solutions in a number of key verticals: smart Internet-of-Things, smart city, autonomous driving, and smart retail. With its planned office opening in Silicon Valley this year, Horizon Robotics hopes to bring an AI capability to more industries and countries.

18

HUIYIHUIYING

Using AI to enhance medical imaging diagnosis

Founded in:	2015
Founders:	Chai Xiangfei
Headquarters:	Beijing
Total fundraising:	Undisclosed
Valuation:	Undisclosed
Select investors:	CDH Investments, Delta Capital, BlueRun Ventures

Chai Xiangfei, founder of Huiyihuiying, worked at three of the world's top medical imaging institutions including the U.S.-based Stanford University Cancer Center, the Netherlands Cancer Institute, and the Radiology Department at the University of Leuven in Belgium. Wanting to help alleviate the challenges facing Chinese doctors and patients as a result of limited and imbalanced healthcare services, Chai founded Huiyihuiying in 2015 with partner and Tsinghua graduate, Guo Na.

Centered around medical imaging, Huiyihuiying has a number of products including a medical imaging cloud platform, radiotherapy cloud platform and digitalized electronic films that allow easy viewing on smartphones. To achieve that, the company partners with hundreds of hospitals and thousands of doctors. One of the more complex applications Huiyihuiying does is providing auxiliary screening assistance to reduce doctors' miss detection rates. The company says its tools can lower missed detection rates to less than 10% from 30%, the reported current average rate for doctors at small cities and townships in China.

Huiyihuiying has focused so far on chest X-rays, lung CT and mammography image analysis, but is looking to expand to other fields. It plans to eventually cover medical imaging screening, diagnosis and treatment.

In terms of fundamental research, Huiyihuiying is cooperating with Stanford University and Tsinghua University to develop further applications of medical imaging AI.

19

ICARBONX

The world's fastest unicorn trying to improve personal health via AI

Founded in:	2015
Founders:	Wang Jun
Headquarters:	Shenzhen
Total fundraising:	Approximately US$200 million
Valuation:	Approximately US$1 billion
Select investors:	Tencent, China Bridge Capital

iCarbonX holds a world record as the fastest unicorn, achieving its US$1 billion valuation six months after it was established. Tencent's investment that gave the company the high valuation at such a young age is a vote of confidence for company founder, Wang Jun. As the former chief executive of Chinese genome sequencing giant, Beijing Genomic Institute (BGI), Wang dreams big.

iCarbonX was created to achieve a goal much bigger than Wang's previous success at BGI: to let everyone manage their personal health from every aspect that pertains to health. That includes not only genetics, but also immune systems, proteins, metabolism, microbes, exercise, diet, and environment. For that purpose, the company released a mobile app called Meum in January 2017, on which users can track and manage all of the above health metrics. For instance, Meum will recommend an ideal diet and exercise scheme based on one's health metrics measured and obtained by physical tests and health data mining.

The vision, because of its all-inclusiveness and complexity, will face many challenges. iCarbonX has been investing in many health verticals to bolster its capacity and expertise. It has purchased stakes in companies providing patient data mining, medical imaging, big data, and even marketing. iCarbonX is also partnering with Chinese agricultural conglomerate COFCO to conduct blood sugar research and applications. In April 2018, it released a customized probiotics dietary supplement food, designed to build a stable and healthy intestinal environment.

iCarbonX will continue to expand its business boundaries, as it inches toward its goal of letting everyone use data mining to control their health.

20

ICEKREDIT

SME and personal credit rating driven by big data

Founded in:	2015
Founders:	Gu Lingyun
Headquarters:	Shanghai
Total fundraising:	Approximately US$45 million
Valuation:	Undisclosed
Select investors:	Youzu.com, China Creation Ventures, FreesFund

IceKredit is named after a book published by Chinese statesman and military general Zeng Guofan in the late Qing dynasty. The book teaches how to read people's qualities by observing their bones, appearance, movements and temperament. For this AI start-up in the 21st century, that concept perfectly reflects its mission: to use technology to provide accurate credit ratings for better decision-making.

The company was founded in 2015 by Gu Lingyun, a PhD graduate in computer science from Carnegie Mellon University with rich work experience at several fintech firms including ZestFinance. It uses machine learning and big data to provide credit ratings on small and medium enterprises and individuals. These credit rating insights and related data are used by financial services firms, many of which are online lenders. Beside helping to decide the creditworthiness of an SME or an individual, IceKredit's solutions can also help financial services firms with precision marketing, anti-fraud services, loan collections and post-loan monitoring.

IceKredit currently has hundreds of paying clients, and most are small-scale banks and online lenders. It is expanding to new areas including public opinion monitoring, which is important to SME creditworthiness. Another area it is improving is to better the quality of its data, as substandard reporting is prevalent among SMEs in China. IceKredit is using on-site visits and cross-verification to ensure that its data are trustworthy.

21

INFERVISION

Using AI to improve early detection of grave diseases

Founded in:	2015
Founders:	Chen Kuan
Headquarters:	Beijing
Total fundraising:	Approximately US$70 million
Valuation:	Undisclosed
Select investors:	Sequoia Capital China, Genesis Venture, Qiming Venture, Advantech Capital

For some time, Infervision's founder Chen Kuan appeared destined to end up on Wall Street and lead a high-flying lifestyle. He was a PhD student with a double major in economics and finance at the University of Chicago. By chance, he learned of deep learning algorithms and was fascinated by its potential. It led him to quit his PhD studies and move back to China to start a company with a goal to assist doctors read complicated medical images more efficiently.

To develop an AI-assisted screening tool for doctors, Chen and his team camped out of a dilapidated apartment near a hospital in Sichuan province for a year. That helped the company release an assisted screening product to help doctors read lung and heart medical images to detect diseases such as cancer early. Then, it released an intelligence X-ray and intelligent CT scan assisted screening tool, which can be applied in breast, abdominal, fracture and cardiac diseases.

As of February 2018, Infervision's solutions have been deployed in 150 hospitals. These tools are conducting nearly 13,000 assisted screening daily on lung cancer, for example. Next, Infervision wants to expand overseas in the U.S., Japan and Europe. Inside China, it hopes to bring its technology to more hospitals in small cities and townships. That will help early detection of disease and improve patients' chances of survival.

The company is also engaged in academic research and has established a partnership with Chinese Radiology to deepen research and application of AI in medical imaging.

22

KNOWBOX

Helping Chinese K-12 students with their homework using AI tools

Founded in:	2014
Founders:	Liu Ye
Headquarters:	Beijing
Total fundraising:	over US$158 million
Valuation:	Undisclosed
Select investors:	Yunfeng Capital, TAL Education, BAI, Baidu Ventures

Knowbox's founder Liu Ye is unusually driven for a reason. In 2007, he was suspected of having multiple myeloma during a regular physical examination. Faced with potentially a five-year survival rate of 49%, Liu thought hard about life. It turned out to be a misdiagnosis. Nevertheless, Liu made some drastic decisions. He left the enterprise software company Inmo he founded years ago to start Knowbox, a company he feels could place him on top of the coming AI technology revolution.

With two co-founders from Baidu and Intel China, Liu's Knowbox targets the homework market in China's public school systems. That's very different from most other online education companies that cater to private tutoring or after-school classes. Utilizing AI technologies including knowledge maps and personal recommendations, Knowbox's tools assist teachers with automatic scoring and question recommendations to improve efficiency. Students get personalized questions based on their homework performance and progress. Knowbox constantly mines the data created by its 27 million students and 2 million teachers to refine its AI content systems.

The company has built a team with 300 staff to focus on content production. About one-third of the team are former teachers, who design homework-based content that closely follow China's public school curriculum.

Knowbox is used in more than 70,000 public schools in 31 provinces in China. The company started commercializing its products at the end of 2016. It provides free services for its basic homework function but charges a fee for value-added services.

23

零氪科技
· LinkDoc ·

LINKDOC

Combining big data and AI to improve healthcare services in China

Founded in:	2014
Founders:	Zhang Tianze
Headquarters:	Beijing
Total fundraising:	Approximately US$150 million
Valuation:	Undisclosed
Select investors:	China Investment Corp, Long Hill Capital, Broadband Capital

Before founding healthcare big data firm LinkDoc, founder Zhang Tianze built a digital media company helping companies including hospitals to manage their public brand image. He has an acute sense for the importance of data, and saw how aggregating, structuring and mining China's massive healthcare data could provide great value.

He also saw how great a waste it can be not taking advantage of that data. For example, Zhang's father, a lung cancer surgeon, and the hospital he works at, keep thousands of cancer patients' data over the past two decades on a a simple digital spreadsheet. Aggregating millions of these "sleeping" data, Zhang believe, will supply critical insights that can save lives.

Thus is LinkDoc's mission. The company has helped hundreds of hospitals in China to digitize and standardize millions of medical records. Its focus are serious illnesses like cancer, which Zhang believes big data and AI can really make a difference. After letting its deep learning models "study" the data, LinkDoc provides a lung cancer diagnosis tool that assists doctors on their diagnosis. It can come in the form of suggested treatment plans and analysis of similar cases. LinkDoc also runs a patient follow-up center that monitors and digitizes over 400,000 cancer patients' illnesses and recoveries. This feeds back into its big data platform and keeps improving the intelligence level of its products.

After securing investment from China's sovereign wealth fund in July 2018, LinkDoc plans to continue improve its existing technology. In terms of new businesses, it will explore expansion to DTP (direct-to-patient) smart pharma operations and health insurance payment services.

24

MALONG TECHNOLOGIES

Using computer vision to enable smart retail and commerce

Founded in:	2014
Founders:	Huang Dinglong
Headquarters:	Shenzhen
Total fundraising:	Approximately US$45 million
Valuation:	Undisclosed
Select investors:	Softbank China, Fortune Venture Capital, Telescope Investment

Malong Technologies is named after its two founders: a Tsinghua PhD with work experience at Microsoft and Tencent, Huang Dinglong, and Matt Scott, a colleague of Huang at Microsoft. The Sino-U.S. partnership is rare among Chinese AI companies, and echoes Malong's unique business proposition: to enable smart retail and commerce via computer vision technology.

Initially, like some of its peers, Malong developed a mobile app in 2015 when mobile apps were the rage. The app helped young people find their desired style of clothing via image searches. After seeing the commercial limitations of the app, the founders decided to turn to the B2B sector. Malong then spent two years to create a cloud-based commodity recognition platform targeting retail companies.

Malong's ProductAI platform allows fashion designers use image searches to find desired fabric much faster. It can also generate tags and descriptions for various images including furniture and travel destinations, in addition to recognizing infringing images. In e-commerce, small and medium-sized retailers can add capabilities via simply plugging into ProductAI's API to allow image searches, style recommendations and price comparisons.

More recently, Malong developed computer vision-based solutions to enable cashier-less retail stores. It also produced a commodity recognition product integrating both software and hardware to assist cashier-less retail operators' rapid expansion. Its ProductAI platform now has English and Japanese versions, and the company plans to further its international expansion. Malong is also exploring opportunities in video commercial analysis and automobile parts.

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MEGVII TECHNOLOGY

Leading face recognition firm with an early start and strong partners

Founded in:	2011
Founders:	Yin Qi
Headquarters:	Beijing
Total fundraising:	Approximately US$490 million
Valuation:	Approximately US$2 billion
Select investors:	China State-Owned Capital VC Fund, Ant Financial, Foxconn

Founded by three classmates at a top computer science class at Tsinghua University in 2011, Megvii is an example of the kind of spark that can be created when talented young researchers meet a disruptive technological revolution at the right time.

Yin Qi, one of the three and now CEO of Megvii, helped develop a facial recognition system while interning and working at Microsoft Research Asia around 2011. The trio saw the business potential of face recognition technology when Facebook acquired Israeli facial recognition start-up face.com in 2012. It prompted Yin to cut short his PhD studies at Columbia University to return to China and focus on developing Megvii, also known as Face++.

As an early research team and start-up focused on commercializing facial recognition technology, Megvii now operates one of the largest open platforms providing facial recognition technology, Face++, and identity verification system, FaceID. Its solutions, provided as a Web API, mobile SDK and other tailored formats, are used in financial services, public security, mobile phones and other sectors. Top Chinese firms including Alibaba, Huawei, Lenovo, Foxconn, Xiaomi and CITIC Bank used Megvii's technology, and some became its investors.

Megvii's future ambitious are much bigger. For the short-term, it plans to continue securing the best talent, further expand its data sets, and build more supercomputing centers. It recently acquired Ares robot to enter the robotics sector. It will continue focusing on serving financial services, smart phones and government-facing city brains projects. In the more distant future, the company wants to power computers to "see" everything just like human eyes, and eventually digitalize the physical environment.

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明略数据 MININGLAMP

MININGLAMP

China's Palantir helping police and banks harvest the benefits of big data and AI

Founded in:	2014
Founders:	Wu Minghui
Headquarters:	Beijing
Total fundraising:	Approximately US$180 million
Valuation:	Undisclosed
Select investors:	Tencent Industry Win-Win Fund, Huasheng Lingzhi Equity Investment, Sequoia Capital China

Miningglamp is founder Wu Minghui's second start-up. Having established a third-party big data marketing firm Miaozhen Systems while studying computer science at Peking University, Wu founded Miningglamp to explore a much bigger market using similar technologies of his first start-up: big data and AI.

But instead of analyzing ads, Miningglamp wants to tap into perhaps the most lucrative and critical sector in China: police and public security. Different from other AI firms focused on recognizing objects and people in surveillance videos, Miningglamp aims to help improve efficiency for police in the investigation process. For example, based on its knowledge map, Minginglamp helps police identify and analyze cases faster, providing related persons and suspect analyses. The company has served customers such as provincial and municipal public security bureaus. It claims its technology enables police departments to achieve a 5% to 20% increase in successful detection rate for all cases.

The company's knowledge map and big data based platforms are also applied in two other sectors: financial services and industrial manufacturing. In financial services, Miningglamp can quickly identify suspected insider transactions. In the high-speed rail sector, it can analyze vehicle operation performance based on data from sensors and other equipment. Minginglamp also released AI brain products tailored to these three industries, and launched an enterprise-facing Siri-like interaction tool, Xiaoming.

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MOBVOI

Voice recognition start-up reinvented as smart consumer device maker

Founded in:	2012
Founders:	Li Zhifei
Headquarters:	Beijing
Total fundraising:	Approximately US$280 million
Valuation:	Undisclosed
Select investors:	Google, Volkswagen Group China, Sequoia Capital China

Mobvoi, which stands for "mobile" and "voice", was among the earliest start-ups in China to focus on voice recognition technology. Founder Li Zhifei is a Johns Hopkins University graduate and a former Google researcher focused on machine translation and natural language processing. Li started the company in 2012 at the beginning of the mobile Internet age with the objective to let people interact with mobile devices using voice command, instead of touch screens.

The idea of initially developing a mobile app quickly turned into producing smart devices from smart watches to smart speakers, as Mobvoi seeks ways to build a more sustainable and tangible business centered around its voice recognition technology.

From 2015 when its first smart device, a smart watch called Ticwatch, was released, Mobvoi's product portfolio now covers smart car rearview mirrors, smart speakers, children's smart speakers, and smart ear buds. In May 2018, the company released an AI chip supporting voice recognition with partner Hangzhou Guoxin Technology.

In the future, Mobvoi aims to continue expanding the user base of its smart devices – from those used at home and in the car - to a critical mass. The company is also exploring applications of its voice recognition technologies for enterprises in the financial services, insurance and property sectors. Its smart car rearview mirror, now operated by a joint venture between Mobvoi and Volkswagen Group China, hopes to add voice interaction capabilities to many more cars in China. The company will also deepen its research and development in tailored AI chip products targeting traditional electronics makers wanting to add voice command to their products.

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MOMENTA

Building the brain for self-driving cars

Founded in:	2016
Founders:	Cao Xudong
Headquarters:	Beijing
Total fundraising:	Undisclosed
Valuation:	Undisclosed
Select investors:	GGV Capital, NIO Capital, Shunwei Capital, Diamler AGI, Sino-French Innovation Fund

Momenta was founded by Cao Xudong, a Tsinghua graduate who was previously Chinese computer vision giant SenseTime's deputy director of R&D. Momenta's own R&D director is Ren Shaoqin, a PhD of a joint program between the University of Science and Technology of China and Microsoft Research Asia. Ren's research paper on image recognition algorithm ResNet won the Best Paper Award at the IEEE Conference on Computer Vision and Pattern Recognition in 2016.

With a star team including the pair above, Momenta quickly obtained investor support to pursue its vision. That mission is to build the brain for autonomous driving, providing tech solutions to automobile OEMs and tier-1 suppliers. Its core technologies include deep-learning-based environment awareness, high-precision maps, and driving decisions.

Momenta provides customers with L3 to L4 autopilot solutions, as well as big data services, including real-time lane and road edge detection, driving area detection, 3D vehicle detection and human feature detection via various types of SDKs.

After building up its tech infrastructure, Momenta is next exploring commercial use. The company plans to partner with the Suzhou city government to test self-driving cars in a designated special area before the end of 2018. The pair will launch an industry fund to invest in upstream and downstream start-ups. Momenta hopes its autonomous driving technology can lower traffic accident rate by 20% to 40% in the next five and ten years.

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MOVIEBOOK

Using AI to power native video ads

Founded in:	2009
Founders:	Ji Xiaochen
Headquarters:	Beijing
Total fundraising:	Undisclosed
Valuation:	Undisclosed
Select investors:	SeneTime, Softbank China, DT Capital

One of two female founders in the China AI Top 50, Ji Xiaochen is different from others in more than one way. She is also one of a few founders who did not study computer science or related studies. A law graduate of Northwest University of Political Science and Law in Xi'an, Ji previously worked at a Beijing film and television production company. She soon saw the potential of smarter film, TV and video ads using technology, and set up Moviebook in 2009.

In 2015, Moviebook launched two products to help film, TV and video creators better monetize their content. It also assists online video platforms and advertisers improve revenue and ad deployment effectiveness. Moviebook's technology can automatically recognize suitable brand planting sites in videos and suggest the best potential advertisers. In the process of implementing native video ads, Moviebook's technology helps lower costs too. For example, an automobile brand can embed its logo in video content by simply using Moviebook's software, instead of actually sending a car to the film production site.

Moviebook was listed on China's New Third Board in 2016, but was delisted in March, 2018. The company also hired a Chinese investment bank in early 2018 to help it plan a listing on the mainboard in the near future. According to its most recent disclosed financials as a listed firm, Moviebook recorded revenues of RMB137 million (US$20 million) and gross profit of RMB40 million (US$5.9 million) during the first half of 2016.

In August 2018, Moviebook raised RMB1.36 billion (US$200 million) from SenseTime, Softbank China and other investors. Moviebook and SenseTime said they would deepen partnerships in augmented reality and video analysis based on AI technology.

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NOITOM™
诺亦腾

NOITOM

Making motion capture technologies affordable and better

Founded in:	2012
Founders:	Liu Haoyang
Headquarters:	Beijing
Total fundraising:	Approximately US$50 million
Valuation:	Undisclosed
Select investors:	VMS Legend Investment Fund, Alpha Group, Legend Capital

Noitom is the word "motion" spelled backwards, indicating the company's aspiration to disrupt the motion capture industry. Founded by Liu Haoyang, a PhD graduate in civil engineering and a master of computer science from Johns Hopkins University, Noitom's mission is to make cost effective motion capture technology available to many more industries outside of movies.

Noitom has developed a Electro Mechanical Systems (MEMS)-based inertial sensor motion capture technology, based on proprietary research on sensors, modal recognition, motion science, and biomechanics. One product is Trance, a hybrid production system providing virtual shooting, real-time motion capture, real-time image synthesis and other related functions on a unified operating interface. Other products include a motion capture system for personal developers, multi-person commercial virtual reality solutions, and VR gloves.

Noitom's solutions have been used for many films including Game of Thrones. Benefiting from affordable Chinese manufacturers, the company is able to lower the costs to expand utilization in many other sectors including animation, game production, sports training, virtual reality, medical diagnosis and robotics.

In the future, Noitom will continue to increase commercialization via product upgrades. It is planning to release a whole-body wireless motion capture system that will make movie shooting easier. It will continue expanding multi-person commercial VR solutions as well.

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ORBBEC

Popularizing 3D computer vision to more devices

Founded in:	2013
Founders:	Huang Yuanhao
Headquarters:	Shenzhen
Total fundraising:	Over US$200 million
Valuation:	Undisclosed
Select investors:	Ant Financial, SAIF Partners, Green Pine Capital

Orbbec's founder Huang Yuanhao has been researching ways to help machines see the world better for years. After graduating from Peking University with a major in mechanics, he has focused on photometric biomedical sensors, underwater imaging and imaging through turbid media research at Hong Kong Polytechnic University and MIT. In 2013, he felt the time finally arrived for machines to see the world as it is: three dimensional.

Orbbec was created to perfect and commercialize 3D computer vision technology. The company currently has a number of 3D camera products designed for different purposes. Some allow more creativity and greater processing power, some are more compatible with existing apps, and some offer compactness to fit small devices. Since 2015, the company has mass produced 3D cameras, which have lower costs and energy consumption because they use the same structured light scheme as the iPhoneX.

The company's 3D cameras are used by cashier-free retail stores, robots and smart home manufacturers. Over 2,000 companies are utilizing Orbbec's products to develop numerous products and applications. As 3D imaging becomes more mainstream, Orbbec is planning to expand its market share in China and elsewhere. Some Chinese smartphone makers are potentially using Orbbc's 3D cameras on its future new models. This may just be the beginning.

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PACHIRA

Voice recognition firm improving customer service and in-car interactions

Founded in:	2009
Founders:	He Guotao
Headquarters:	Beijing
Total fundraising:	Undisclosed
Valuation:	Undisclosed
Select investors:	Gobi Partners, NavInfo

He Guotao grew up in Macau, but it was clear to him that the mainland Chinese technology market was where the real opportunities flourished. A Peking University graduate in computer science with years of development experience in voice recognition, He founded Pachira in 2009 in Silicon Valley. The idea was to figure out a viable commercial path for the voice technology that he and his team have spent years mastering.

Pachira found customer service the perfect venue. Based on its voice recognition technology, the company developed a cloud big data platform that turns massive amounts of voice calls to text. The text is then automatically categorized, tagged and structured to provide valuable insights and references to call center staff. This solution helps significantly improve call center efficiency and service quality.

In 2011, the company entered the vehicle voice market after receiving a strategic investment from Chinese mapping firm NavInfo. It developed software, hardware and chips for the purpose of allowing users to issue voice commands with in-car devices. On the other hand, Pachira is upgrading its customer service big data platform by adding text-to-speech functions. This will enable enterprises to allow more customer service work to be automated.

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PONY.AI

An autonomous driving start-up founded by star coders

Founded in:	2016
Founders:	Luo Tiancheng
Headquarters:	Silicon Valley, Beijing, Guangzhou
Total fundraising:	Approximately US$214 million
Valuation:	Undisclosed
Select investors:	Morningside Venture, Legend Capital, Sequoia China, IDG Capital

Andrew Ng called him "one of the world's best hackers". It's really not an exaggeration. Lou Tiancheng has won numerous national computer and math competitions ever since he was 15. Then, he won TopCoder and Google coding challenge championships in China and globally while still an undergraduate in Tsinghua University. The computer science PhD from Tsinghua, deemed by the Chinese programmer community as "The Godfather" (despite being only 32), later worked at Google and Baidu. It was while at Baidu working on the Chinese search engine's autonomous driving project, Lou got to know the project's chief architect, James Peng. The two joined hands to launch Pony.ai at the end of 2016.

With their top-notch background, investment appeared to come easily from Sequoia and IDG. The founders hired many more staff just like themselves: champions of the International Informatics Olympiad and TopCoder challenges. Half of its staff are PhD degree holders from world-renowned universities.

Pony.ai's ambitions are nothing short of grand. The young start-up is eyeing all aspects of the autonomous driving space, from operating systems, tech solutions, hardware, and even making their own cars. It has obtained self-driving road test licenses in California and in Beijing. In Guangzhou, it launched a self-driving fleet for public test driving in a controlled environment. In the next two years, Pony.ai will test its vehicles in a 30 square kilometer area in Guangzhou that will be built especially for self-driving vehicles.

Lou believes that Pony.ai has a great chance of making self-driving a reality soon in China. Part of that confidence comes from how governments in China are embracing innovation and offering support, like those Guangzhou city has offered to his company. Is he overly optimistic? That will have to be answered in time.

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QUOTIENT KINEMATICS MACHINE

Building China's own industrial robot powerhouse

Founded in:	2011
Founders:	Shi Jinbo
Headquarters:	Dongguan
Total fundraising:	Approximately US$214 million
Valuation:	Undisclosed
Select investors:	Sequoia China, SAIF Partners

Each year during the Mid Autumn Festival, factories in China hire tens of thousands of temporary workers to make and package perhaps up to a billion moon cakes. It has always been a hectic time, which is made more challenging as the number of low-end laborers decreases in China. Quotient Kinematics Machine is founded to help alleviate the kind of labor shortage by automating repetitive factory work with industrial robots. Its robotic arms have already helped Hong Kong's Maxim to make moon cakes during the traditional Chinese holiday season.

What sets Quotient apart is also that it was founded by a female entrepreneur, one of two women founders of the China AI Top 50. Shi Jinbo, a PhD graduate of the Hong Kong University of Science and Technology, was a student of Prof. Li Zexiang. Prof. Li is known for having incubated and guided his student Wang Tao to found DJI, now the world's largest drone company. The professor also helped Shi during her early days, introducing her to win one of the company's first contracts, helping an American phone maker deal with automatic inspections.

Quotient wanted to expand beyond serving as a technology supplier helping companies install and manage their automated production lines. So it released its own robotic arms brand with products for sorting packages and packaging food, medicine, electronics and chemicals. The company's dream, as Shi said, is to help China catch up on the industrial robotics sector, which is highly reliant on imported core parts.

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ROADSTAR.AI

New rising star in autonomous driving technology

Founded in:	2017
Founders:	Tong Xianqiao
Headquarters:	Shenzhen
Total fundraising:	approximately US$138 million
Valuation:	Undisclosed
Select investors:	Shenzhen Capital Group, Wu Captial, Yunqi Partners, CMB International Capital

Roadstar.ai is the newest shining star in autonomous driving in China. Founded by three experts with rich experience in self-driving technology, Roadstar.ai specializes in level 4 autonomous driving technologies using a multi-sensor fusion framework.

Company CEO Tong Xiaoqiao is a PhD in autonomous driving at Virginia Tech and worked at Apple, Nvadia and Baidu, all focusing on self-driving technology. CTO Heng Liang is a Tsinghua graduate and an electrical engineering PhD from Stanford. He later worked at Google Map and Tesla Autopilot projects. Chief scientist Zhou Guang also graduated from Tsinghua, and worked at Baidu's autonomous driving team in Silicon Valley.

Such star power has attracted great investor support, leading the company to raise one of the largest amounts of VC funding a year after its founding. Roadstar.ai has set a clear path for commercialization. It plans to combine its multi-sensor approach, which includes Lidar, cameras, radar and GPS, with China's affordable manufacturing to produce high value L4 solutions to OEMs and suppliers.

In May 2018, it released an autonomous driving solution equipped with all made-in-China laser radar. The solution is able to achieve several hours of non-intervention driving in China's complicated roads. But more importantly, Roadstar.ai plans to lower such solution costs to less than 20% of the current level in two years. It will first commercialize this technology in a controlled environment, such as in industrial parks and campuses. Commercial vehicles, such as construction and logistics vehicles, will be its focus initially too.

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Rokid

ROKID

Maker of smart speakers, AR glasses and futuristic cool things

Founded in:	2014
Founders:	Misa Zhu
Headquarters:	Hangzhou
Total fundraising:	Approximately US$150 million
Valuation:	Undisclosed
Select investors:	Temasek, CDIB, IDG Capital, Advantech Capital

In the highly homogenous Chinese AI market, Rokid wants to be different. For one thing, as most companies rush to sign new contracts and expand to new markets, Rokid appears comfortable with its own pace. Headquartered in Hangzhou, the maker of smart speakers and AR glasses is undisturbed by how fast things tend to move in China. For instance, it took the company four years to hold its first product launch event. Chinese technology companies commonly stage such event once a year.

Rokid's ideals seem out-of-place as well. When hundreds of Chinese smart speaker makers from Alibaba, Baidu, Xiaomi to independent AI start-ups all compete on value (i.e. price), Rokid insists on targeting high-end users with premium quality products. From its first pricy, bulky premium smart speaker to more user-friendly compact versions, the company's products are priced in a category of its own. Founder Misa Zhu, a former Alibaba executive, hopes users will recognize Rokid products' superior quality from better voice interactions to elegant design. Zhu hopes that Rokid can sell over 1 million smart speakers in 2019, and gradually grow that number.

On the other hand, Rokid is seeking innovative ways to use its AR glasses in retail and other sectors, while finding ways to make its AR glasses cooler. It also released an AI voice chip in June 2018 that can be used to provide voice interactions on smart speakers and children's story-reading machines. Eventually, Rokid wants to become a platform company offering consumer products and enterprise solutions, or even "Google+Apple", in Zhu's own words. There is one thing that Rokid surely shares with its Chinese peers: ambition.

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ROOBO

Robot maker turned to AI tech solutions provider

Founded in:	2009
Founders:	Liu Yingbo
Headquarters:	Beijing
Total fundraising:	Approximately US$150 million
Valuation:	Undisclosed
Select investors:	Seven Seas Partners, iFlytek

Many of today's Chinese AI companies are founded by entrepreneurs with previous experience building companies during the mobile Internet era. Roobo was founded by Liu Yingbo, who was co-founder of a restaurant recommendation app. Other members of the founding team hail from big Chinese tech companies 360 and Tencent, whose former chief technology officer Xiong Minghua joined Roobo as chairman in 2017 after making a big investment in the robotics start-up.

Roobo initially released a series of children's robots to serve as educational tools, and a robot dog pet. Similar to other robot companies, it expanded to enterprise services as the consumer robot market was still in its infancy. In 2017, the company announced that it would transition toward an AI platform company. It means instead of being a robot maker, it will provide AI technology solutions including microphone arrays, computer vision, voice interactions, behavior systems and cloud platforms, to other enterprises. Roobo hopes its technology can help companies from electronic appliance makers, healthcare and education companies to add "intelligence" to their existing products.

The company has made progress on this new strategic direction. In the summer of 2018, the company launched an enterprise-facing children's robot solution. Education robot companies can use the solution, including an SDK and mobile app, to develop their products. It also partnered with Microsoft to release a voice development kit for enterprise clients.

What's noteworthy is that Roobo released an AI chip as early as 2016, far before AI chips became the "must-haves" for Chinese AI companies in 2018. The company called its ASIC architecture chip the first commercial AI chip in China, though it's unclear if the chip achieved significant usage or penetration.

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SENSETIME

Dominant facial recognition company loved by investors

Founded in:	2014
Founders:	Tang Xiaoou
Headquarters:	Hong Kong
Total fundraising:	Approximately US$1.6 billion
Valuation:	Undisclosed
Select investors:	CDH Investments, Alibaba, Temasek, Hopu Investments, Qualcomm Ventures

SenseTime was founded in 2014, but its founding team had an early start in AI. The team working at a research lab led by Prof. Tang Xiaoou at the Chinese University of Hong Kong began working on deep learning back in 2011. It was among the earliest and most productive research teams, contributing nearly half of the research papers presented during 2011 to 2013 at two top conferences on computer vision. It also combatted – and occasionally beat - Facebook and Google at global image recognition competitions.

The experience of helping the Hong Kong police to identify car license plates of suspects on the run using its image recognition research confirmed the team's desire to test its technology in real-life settings. The company, with four to five people initially, started business at the optimal time. Within about a year, it has secured dozens of clients, which quickly grew to hundreds in another twenty months.

Since 2016, SenseTime quickly become the most high-profile AI company in China by continuously raising massive VC rounds and partnering with top brands including smartphone maker Xiaomi and Huawei. The company, led by CEO Xu Li, also partners with China Mobile to supply its facial recognition technology to the Chinese state-owned telecommunication giant's identification system monitoring over 300 million users. Other top sectors SenseTime supplies its technology to include banks, police departments, city governments, airports and retailers.

In the future, SenseTime plans to deepen its research to serve more industries, including autonomous driving and augmented reality. Ultimately, the company has its ambitions matching its current success: to become the "Google" or "Facebook" in the age of AI.

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SENSINGTECH

Dominant facial recognition company loved by investors

Founded in:	2016
Founders:	Lu Zhen, Yuan Peijiang, Shi Zhenyun
Headquarters:	Beijing
Total fundraising:	Approximately US$60 million
Valuation:	Undisclosed
Select investors:	Cash Capital, SDIC Capital, MatrixPartners China, Kinzon Capital

In a sensational BBC program in 2017, the local police in Guiyang city took seven minutes to catch a "suspect" on the run played by a BBC correspondent. This system is powered by SensingTech's dynamic facial recognition and real-time warning system, assisted by surveillance cameras installed on each street corner in the Southwest city.

As a relatively new entrant to the lucrative public security market, SensingTech is able to quickly carve out a niche for itself. The company secured a top Chinese AI authority Zhang Bo, who is an academician from the Chinese Academy of Sciences and dean of Tsinghua's AI research institute, as its chief scientist. Its three co-founders all are experienced researchers of AI technology.

The products of SensingTech are thoughtfully designed. For example, a portable toolkit allows local authorities to better manage large flows of people during special occasions, including peak travel seasons, special festival gatherings and big conventions. Another app allows police to see the crime scene directly after suspects' faces are recognized and an alarm has been triggered.

Next, SensingTech will continue to cultivate the public security market by improving its technology. One example is to develop limb and behavior recognition. If people cover their faces, SensingTech can still recognize the person by analyzing their body structure and how the person moves.

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SLAMTEC

Enabling robots to see and move via affordable SLAM solutions

Founded in:	2013
Founders:	Chen Shikai
Headquarters:	Shanghai
Total fundraising:	Approximately US$40 million
Valuation:	Undisclosed
Select investors:	CAS-backed fund, Shanghai Qianshi Investment, Beijing Pangu Venture Capital

It was no accident that Chen Shikai founded a robot start-up. While working for Intel as a programmer in Shanghai, Chen started an after-work interest group RoboPeak to research ways to let robots move around their environments. That team later became the foundation of Slamtec, a robot autonomous localization and navigation solutions provider.

In other words, Slamtec gives robots "eyes and cerebellum" to see their environment and be able to move around a room, for example, without bumping into walls. The system is partially based on SLAM (simultaneous localization and mapping), the company's namesake, but also incorporates computer vision, Lidar, core sensor and upgraded algorithms developed by the company.

As robot vacuum and autonomous street cleaning robots become more mainstream in China, Slamtec's products were met with increasing demand. The company's three main products: a 360-degree laser range scanner; a modular system for autonomous localization and navigation; and a general purpose service robot cloud platform, has been used by thousands of robot companies in and outside of China.

Part of Slamtec's innovation lies in cutting down the costs of Lidar, so that its systems can be used by a wider range of robot builders. The company brought down the cost of Lidar to less than one-tenth of the costs for industrial usage, so that even personal robot building enthusiasts can afford it. Next, Slamtec is making a natural move toward autonomous driving, as the basic technologies are similar. But it will take a long time, as the company needs to significantly deepen its research and conduct road tests.

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TERMINUS 特斯联

TERMINUS TECHNOLOGIES

An IoT solutions provider riding the China AI wave

Founded in:	2015
Founders:	Ai Yu, Wang Yongqiang
Headquarters:	Beijing
Total fundraising:	Approximately US$70 million
Valuation:	Undisclosed
Select investors:	China Everbright, IDG Capital

China has a national mandate to develop the AI industry, and smart capital knows the best investment strategy is to follow the government. Terminus Technologies was incubated by China Everbright Holdings in 2015 to provide large scale smart IoT solutions to governments and enterprises. Its solutions power smart city planning, including traffic and energy usage, help buildings lower energy consumption, and ensure public security.

The company's smart hardware including smart doors, smart locks and central surveillance systems are claimed to have helped lower crime rates by over 90% at buildings with its systems installed. A centralized building management system lets building owners lower energy consumption by 30%. All of these functions are powered by a cloud-based system, smart hardware and mobile apps. Terminus' solutions have been deployed in over 8,000 projects in 70 cities in China.

The challenge now facing Terminus is how to scale its business and lower costs, and how to further improve efficiency by mining the data that's being generated across its platforms.

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THINKFORCE

A new and mysterious AI chip company backed by star investors

Founded in:	2017
Founders:	Xu Ruhao
Headquarters:	Shanghai
Total fundraising:	Approximately US$66 million
Valuation:	Undisclosed
Select investors:	Yitu Tech, Yunfeng Capital, Sequoia Capital, Hillhouse Capital

Founded in February 2017, ThinkForce is an upstart AI chip start-up that is still very much wrapped in mystery. This is perhaps a conscious decision, as the company's founder and legal representative, Xu Ruhao, was previously a manager at Hanxin.

Hanxin is a Chinese microchip developer that gained notoriety in the early 2000s after it was found to have cheated tens of millions of U.S. dollars worth of state research funding. Hanxin claimed to have developed China's first DSP chip on its own, but the chip was actually imported Western chips with the original logo sanded away and replaced with Hanxin's logo. Certainly a cautionary tale as China strives to obtain chip self-sufficiency today, but there is no clarity regarding Xu's involvement in that episode from over ten years ago.

ThinkForce says its team is made of senior experts in the field of chip design, software algorithm and system development. One senior manager whose identity was made public previously worked at Tencent and graduated from MIT. Top investors seem to feel confident, putting RMB450 million (US$66 million) into ThinkForce ten months after its establishment.

In terms of product, ThinkForce plans to develop AI-oriented chips for various applications such as computer vision. Its chips will be compatible with a variety of mainstream deep learning frameworks. ThinkForce's software toolkit facilitates deep learning training and is suitable for both the cloud and edge computing.

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TONGDUN TECHNOLOGY

Anti-fraud risk management solutions powered by AI

Founded in:	2013
Founders:	Jiang Tao
Headquarters:	Hangzhou
Total fundraising:	Approximately US$145 million
Valuation:	Undisclosed
Select investors:	Temasek Holdings, Tiantu Capital, Advantech Capital, Qiming Venture, IDG Capital

Tongdun Technology was started with a mission to provide anti-fraud technology to banks, but it took quite a detour to get there. Founded by Jiang Tao, a former developer at Alibaba and a Fudan University graduate, Tongdun realized it faced a number of challenges convincing banks to trust a small start-up. Banks also had a natural mistrust of cloud-based software, and their cycle of implementation took too long.

Jiang was lucky to convince an Asian VP at ThreatMetrix, a U.S. identification authentication services firm, to join him. The company quickly shifted its focus to provide blacklists, and rapidly expanded its blacklists by asking companies to share their own lists. As Chinese P2P industry boomed around 2014, the company found its services suddenly in great demand. P2P lending platforms, microfinance firms, e-commerce firms, social media apps and dating sites all turned to Tongdun, which then combined this enriched data to build more comprehensive risk profiles.

As of early 2018, Tongdun's various APIs including anti-fraud, credit scores and risk management solutions were used over 100 million times daily. As one of the largest third-party anti-fraud services providers, the company now serves banks, insurance and asset management firms, in addition to its more "traditional" clients.

Next, the company has its eyes set on Southeast Asia, where Chinese Internet finance firms have been active and the local online banking market is expected to grow significantly.

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TURING ROBOT

Providing voice interaction systems for children's robot

Founded in:	2010
Founders:	Yu Zhichen
Headquarters:	Beijing
Total fundraising:	Approximately US$60 million
Valuation:	Undisclosed
Select investors:	Alpha Group, ZOY Capital

The founding team of Turing Robot tried many things before finally settling on its current business. Led by Yu Zhichen, a graduate of Beijing Jiaotong University with a degree in applied mathematics, the team first tried to develop a mobile app in 2010 to let users find travel routes, order tickets, listen to music and read news. Two years later, it released a voice assistant mobile app with the belief that voice interactions will render traditional search tools like Baidu irrelevant. But that proved to be too optimistic.

The team decided to still focus on voice assistant technology, with a special emphasis on servicing children's robots. Based on semantic understanding, dialogue system and multi-modal interactions, Turing Robots provides voice interaction systems to online chatbots and hardware robots. Its child dialogue system factors in children's unique voice pattern and speaking habits. Turing Robot also partners with children's content aggregators and IP holders to produce cartoon character-based robots. Its software also screens content on its voice platform to make sure all dialogues are appropriate for children.

As of today, Turing Robot claims to have provided solutions to over 10 million robots, and is expanding its product pipeline. Beside robots, it is enabling other devices including watches, toys and teaching aids to make interactive and fun companions for children.

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TUSIMPLE

Developing self-driving trucks for ports and other businesses

Founded in:	2015
Founders:	Chen Mo
Headquarters:	Beijing
Total fundraising:	Approximately US$85 million
Valuation:	Undisclosed
Select investors:	Sina Corp, Nvidia, Composite Capital Management (HK)

TuSimple's founder Chen Mo, who grew up in Canada, started three companies in China during a ten-year span. From outdoor media, used car online trading and online gaming, none brought great success. In 2015, Chen founded TuSimple's predecessor backed by Sina Corp to provide image recognition technology to Internet companies. A year later, Chen decided to change the company's name to its current form, and to reposition the company as an autonomous driving truck producer. He believes the trucking sector will create the greatest value and the technology is the most mature for commercial application.

TuSimple has developed a computer vision-based multi-sensor fusion approach toward realizing L4 level autonomous driving trucks. As one of the earliest players in the sector in China, TuSimple is also taking a different approach toward commercialization. Instead of supplying its technology to OEMs or tier 1 suppliers, like some of its competitors, TuSimple focuses on providing low cost autonomous driving trucks directly to logistic companies and ports. It is currently testing a fleet of autonomous driving trucks at a port in China, with the hope of deploying the trucking fleet for commercial use soon.

The company is also conducting road tests in China and the U.S., with the aim of realizing usage as quickly as in 2019. Once it completes the trial in the Chinese port, TuSimple will partner with more ports to make its unmanned truck fleet available for wider use.

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TUYA SMART

Enabling smart IoT systems and making it easy

Founded in:	2014
Founders:	Wang Xueji
Headquarters:	Hangzhou
Total fundraising:	Approximately US$250 million
Valuation:	Undisclosed
Select investors:	Future Fund, NEA, C.M. Capital, Broadband Capital

Founded by a team from Alibaba Cloud, it is natural that Tuya Smart's mission is to let enterprises produce "smart" products as easily as opening an online store on Taobao.

Specifically, Tuya Smart focuses on adding AI to Internet-of-Things (IoT) devices, such as lighting devices and home appliances. Enterprises from manufacturers, OEMs, retailers and consumer brands can simply plug into Tuya Smart's solutions to add "intelligence" including voice interaction, intelligent management and prediction capabilities to their products. Tuya Smart's solutions come in the form of a cloud platform, smart modules, apps and its own IoT operating system.

What sets Tuya Smart apart is its ability to quickly scale. Only four years after being founded, it has helped over 10,000 companies in over 100 countries. Its solutions enabled over 11,000 smart products. Based on the large scale of deployed smart IoT devices, Tuya Smart's platform is handling daily hardware requests of 20 billion times and 6 million voice interactions.

Next, the company will focus on Smart Home, Smart Business and Smart City projects. It will continue to research and improve on core technology such as voice recognition and tailored solutions.

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UBTECH ROBOTICS

A highly valued and practical robot maker

Founded in:	2012
Founders:	James Zhou
Headquarters:	Shenzhen
Total fundraising:	Approximately US$950 million
Valuation:	Undisclosed
Select investors:	Tencent, Qiming Venture Partners, CDH Investments, iFlytek

Founded by a self-made robot builder long before AI became "hot", Ubtech Robotics' early days were a personal struggle for founder James Zhou. He sold his properties and borrowed money from friends to produce a family humanoid robot Alpha 1S, which can make better movements compared to other products on the market at the time. That was followed by similar consumer-facing robot, Alpha 1 Pro and Alpha 2. Under a partnership with Apple, Ubtech sells its Jimu Robot, a do-it-yourself STEM-friendly robot for children, at many Apple stores .

Starting in 2017, Ubtech expanded its product line to enterprise-facing robots. It released a cloud-based customer service robot, Cruzr, to be used in public places, local government offices, and schools. Over two thousand Cruzr units will be deployed to retail stores across China at Ubtech's strategic investor, Beijing Easyhome Furnishing Chain Store Group this year. The company is soon planning to release a robot security patrol car that can be used to detect intruders.

Ubtech will now focus its research on large-scale humanoid robots, as most of its robots are currently small to medium sized. It will continue researching humanoid robot drive servo, gait motion control algorithm and computer vision. Another direction is serving as a point of control for smart home devices, perhaps as an alternative to smart speakers. Ultimately, founder Zhou's dream is to produce robots for every family to have a new robot-friend.

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UNISOUND

Leading voice recognition solutions provider for Internet-of-Things

Founded in:	2012
Founders:	Huang Wei
Headquarters:	Beijing
Total fundraising:	Over US$250 million
Valuation:	Undisclosed
Select investors:	China Internet Investment Fund, China Electronics Health Fund, Qiming Venture, Qualcomm Ventures

An early start and unwavering perseverance are key to success. Unisound exemplifies this well. Founder Huang Wei began working as a voice recognition researcher at Motorola Research Center in 2004 after graduating from the University of Science and Technology of China majoring in information and communication engineering. He helped to develop a mobile phone voiceprint authentication system for the leading mobile phone brand. After a stint at China-based Shanda Innovations, where he focused on voice recognition research, Huang founding Unisound in 2012 to test his research and ideas in his own start-up."

The company decided to carve its own niche in the Internet-of-Things sector, helping home appliance makers to add voice interactions to their products. It initially partnered with domestic TV makers and air conditioner producers to allow users give voice command to control these devices. Unisound slowly expanded to the more crowded sectors including healthcare, helping doctors input medical records using voice commands instead of typing on computers, and automobiles, where Unisound enables voice interactions inside the car via devices like rearview mirrors. Other sectors the company eyes include voice capabilities for kid-friendly robots, smart speakers, educational devices and legal services.

As a handful of government-backed and strategic investors put capital into Unisound in July 2018, the company is humming on all cylinders. Two months earlier, it released an AI chip customized for voice applications in the IoT sector, with plans to launch more special use chips in the future. It is strengthening its super computing platform as it helps to set up and operate AI super computing centers for the Xiamen city government and a unit of Ping An Group. It is leveraging its strong connections to obtain more government businesses in the smart transportation and smart city arena.

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小i机器人
www.xiaoi.com

XIAOI ROBOT

Earliest and leading player in China's chatbot sector

Founded in:	2001
Founders:	Yuan Hui
Headquarters:	Shanghai
Total fundraising:	Inapplicable
Valuation:	Approximately US$370 million
Select investors:	Alibaba Innovation Ventures, Broadband Capital

Xiaoi Robot, as the oldest company among China AI Top 50, has a storied past. Founded in 2001 by Yuan Hui, formerly a manager at Microsoft, and a Chinese Academy of Science PhD student Zhu Pinpin, Xiaoi Robot initially made consumer software helping users to synchronize email on their phone and made a fun personal chatbot. After those failed to achieve commercial success, Xiaoi turned to serving enterprise clients with its core product: a customer service robot. That strategic shift took eight years.

But it was no time wasted, as Xiaoi became one of the earliest companies in the chatbot industry. It quickly gained momentum, winning clients from government entities to state-owned enterprises. Xiaoi's chatbot systems, supported by industry specific knowledge map, help enterprises significantly lower its labor force in their customer service department.

In 2015, Xiaoi listed on China's New Third Board, but was delisted in March 2018. It plans to seek a listing elsewhere – potentially in Hong Kong – in the next one to two years. The company has turned a profit in 2017, and is expected to reach revenues of RMB500 million (US$73 million) and profit of RMB100 million (US$15 million) in 2018. That is a significant improvement compared to the preceding four years when it suffered losses.

If Xiaoi can complete an IPO soon, it may become the first Chinese AI company to achieve such a feat. That would be fitting for Xiaoi, a true veteran in China's AI industry.

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依图 | YITU

YITU TECHNOLOGY

Earliest and leading computer vision company in public security surveillance

Founded in:	2012
Founders:	Zhu Long
Headquarters:	Shanghai
Total fundraising:	over US$416 million
Valuation:	approximately US$2 billion
Select investors:	China Industrial Asset Management, ICBC International Holdings, Sequoia Capital, Yunfeng Capital, Hillhouse Capital

Yitu Technology got its start assisting local police to read fuzzy surveillance video footage to better identify objects like cars and people. As among the earliest computer vision companies trying to find commercial applications in public security surveillance, Yitu's success is no accident.

Founder Zhu Long, or Leo Zhu, is a statistics PhD graduate from UCLA and conducted postdoctoral research at MIT Artificial Intelligence Lab. Back in 2012 after Yitu was founded, Zhu and his team secured the company's first project by demonstrating satisfying results in correctly identifying vehicles using fake license plates. The company solidified its strength by expanding its work to identifying suspects and lost children, while scaling its operations. In January 2018, Yitu's systems were deployed in over 20 provincial public security bureaus and over 300 cities.

Naturally, Yitu is monetizing its technology elsewhere, such as enabling banks to utilize facial recognition. It is expanding in medical image, smart retail and smart city projects, which digitize city data including traffic, energy supply information and infrastructure development to better manage traffic and optimize energy consumption. The company is also exploring in man-machine interactions, and has invested in a Chinese AI chip start-up called ThinkForce.

Next, internationalization is top on Yitu's priority list, as domestic competition becomes exponentially more competitive. In January 2018, the company opened its first overseas office in Singapore, with its eyes set for new business opportunities across Southeast Asia. In addition, Yitu continues to deepen research and development of new products and technology.

This report has been compiled by China Money Network.

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