

# Rising with AI's explosive growth

Innovation capabilities and strategic vision will be key to China becoming a world leader in artificial intelligence by 2030

By EDWARD TSE  
and JACKIE TANG

The global artificial intelligence (AI) market has experienced explosive growth in recent years, and this game-changing technology is now considered the "next big thing" after the mobile Internet.

AI has a long development history but recent breakthroughs have led to a new inflection point. Advances in deep learning neural network algorithms, alongside improved computer processing power, and the abundance of big data that serves as valuable training data are all contributing to the rise of the AI industry.

China's AI industry has been growing in an exponential manner. According to Tencent Research Institute, the number of AI companies has increased more than tenfold over the past 10 years, from 57 in 2007 to 592 by June 2017. Remarkably, the number of newly established AI startups in 2015 was equivalent to the total number of AI startups from 1999 to 2012.

In terms of fundraising, according to *The Economist*, Chinese AI

companies received \$2.6 billion in investment from 2012 to 2016 while US peers received \$17.9 billion over the same period. However, China has been catching up quickly in recent years.

The Chinese government has positioned AI as a national strategic priority. China, earlier seen as a technology development laggard, aims to become a world leader in AI to drive its economic transformations with it.

In the most recent government policy document outlining the New Generation AI Development Plan, the State Council, the country's cabinet, has declared an ambitious goal of becoming a world leader in AI innovation with a market size of over 1 trillion yuan (\$151 billion) by 2030.

Policies such as Made in China 2025, the Three-Year Guidance for Internet Plus AI plan and the New Generation AI Development Plan are all top-down initiatives aiming to take the nation's AI technology forward. Furthermore, local provincial and city governments are also offering preferential policies and generous financial incentives to AI startups. For example, the North

China city of Tianjin recently set up a 30 billion yuan fund to support the local AI industry.

Data is the key to unlocking the potential of AI development. With 751 million Internet users and 724 million smartphone users, Chinese are embracing a 24/7 connected lifestyle and adopting all kinds of new digital products and services. Their ubiquitous connectivity has led to a tremendous amount of data that can be further monetized. And with the massive amount of training data sets as input, the AI algorithms are continuously self-tuning and improving. Companies are now able to leverage AI-enabled tools to develop a more comprehensive and dynamic understanding of their customers and competitors.

This vibrant innovation and entrepreneurial ecosystem has also fueled China's AI development. Chinese AI-based patent applications grew 186 percent between 2010 and 2014, a huge increase from the previous five-year period.

Also, in the past two years, all the top-performing teams in the ImageNet Large Scale Visual Recognition Challenge, an influential AI computer vision contest, were

Chinese, while half the teams were Chinese-based. Meanwhile, Internet giants such as Baidu, Alibaba and Tencent, along with rising startups like Mobvoi, iCarbonX, Megvii and SenseTime, and unicorns (companies worth more than \$1 billion) like Didi Chuxing and Xiaomi, are all investing in or experimenting with AI technology.

Baidu is one of the major leaders in AI development in China. It established the Institute of Deep Learning in 2013 and the Silicon Valley AI Lab in 2014. In 2017, Baidu announced a shift in its strategy from mobile-first to AI-first, and recruited Qi Lu, a former executive vice-president at Microsoft, as its new chief operating officer. In particular, it has launched an open-source platform for autonomous driving solutions, namely Project Apollo, to transform the global research and development landscape of self-driving vehicles.

Yet, China's AI industry still faces major challenges. First, China's academia is not doing much in fundamental scientific research, especially in the areas of advanced computer algorithms and computing infrastructure. So far, the major-

ity of groundbreaking research is still being done in the West.

Second, AI startups are good at launching new products and features to satisfy unmet market demand. However, they primarily rely on business model innovation rather than technology innovation. Third, governments and venture capitalists tend to provide more incentives to commercial applications of technology over fundamental technology research, which takes more time and involves more risks.

The success of China's ambitious goal to become a world leader in AI by 2030 will hinge on the nation's innovation capabilities and long-term strategic vision. Could China eventually achieve global leadership in AI? Like everything that is related to business and technology innovations these days, it would be imprudent to count China out.

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## Making migration an act of choice

Inclusive rural development can curb conflict, boost sustainability and rule out distress relocation as a last resort

By JOSE GRAZIANO DA SILVA

Throughout history, one of the most effective strategies for people to look for a better future has been to move — in most cases leaving impoverished rural areas in search of more productive opportunities elsewhere.

Indeed, migration has since our earliest days been essential to the human story — the source of multiple economic and cultural benefits.

But when migration is out of extreme need, distress and despair, it becomes another story. Forced migration is rooted in conflicts, political instability, extreme poverty, hunger, environmental degradation and the impacts of climate change. In these situations, people have no choice other than to move.

This year's slogan for World Food Day on Oct 16 was: "Change the future of migration. Invest in food security and rural development." It addressed the structural drivers of large movements of people in order to make migration safe, orderly and regular.

This is all the more pertinent today because the numbers of hungry people are on the rise again after decades of progress.

According to this year's edition of *The State of Food Security and Nutrition in the World*, 815 million people suffered from hunger last year, an increase of 38 million people compared to 2015 (777 million). This was largely due to conflicts, droughts and floods around the world.

In fact, conflicts have driven northeast Nigeria, Somalia, South Sudan and Yemen to the brink of famine and triggered acute food insecurity also in Burundi, Iraq and elsewhere.

Globally there are now around 64 million people forcibly displaced by conflict and persecution, the highest number since World War II. Furthermore, drought, due to an unusually powerful El Nino — the Pacific Ocean climate cycle with a global impact — has sharply reduced access to food in much of Africa.

Rural households often bear the brunt of these drivers. Most of the world's poor live in rural areas,

and many rural youth, especially in sub-Saharan Africa, migrate in the absence of productive opportunities.

But let's set the story straight: Despite widely held perceptions, most of those who migrate remain in their countries of origin. There are around 763 million internal migrants worldwide — one in every eight people on the planet, with the majority moving from the countryside to cities.

Of the 244 million international migrants recorded in 2015, one-third came from G20 countries and consisted of people who moved to pursue more productive opportunities. South-South migratory flows are now larger than those from developing to developed nations.

Conflict, rural poverty and climate change all demand increasing attention as they drive up distress migration as a last resort, which generates a tangle of moral, political and economic problems for migrants, their eventual hosts and the transit points in between. We all have roots and few of us wish to sever them. In fact, even in the

most extreme situations, people would rather remain at home.

Inclusive rural development can help on all fronts, curbing conflict, boosting sustainability and making migration a matter of choice rather than desperation.

Decent employment opportunities — which can be generated by productive agriculture and supporting activities ranging from seed research and credit provision to storage infrastructure and food processing businesses — are urgently needed to convince a fast-growing number of young people in rural areas that there are better fates than hazardous journeys to unknown destinations.

Migration itself is part of rural development, seasonal migration is closely linked to the agricultural calendars, and remittances are a huge force for improving both rural welfare and farm productivity. Migrants' contribution to development needs to be recognized and cherished, as they are the bridges between countries of origin, transit and destination.

The Food and Agriculture Organization (FAO) of the United Nations is working to address the root causes of migration.

This means promoting policy options that favor vulnerable people. It includes youth job training and inclusive access to credit, crafting social protection programs that offer cash or in-kind transfers, specific measures to support those returning to rural areas of origin, and offering assistance for the provision of seeds, fertilizers and animal health services, fine-tuning early warning systems for weather risks and by working for sustainable natural resource and land use.

As co-chair in 2018 of the Global Migration Group, comprising 22 UN agencies and the World Bank, the FAO will advocate for solutions that make migration an act of choice and not a desperate last resort. Agriculture and rural development have a key role to play in this.

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