Evolution & Opportunities in China's Artificial Intelligence
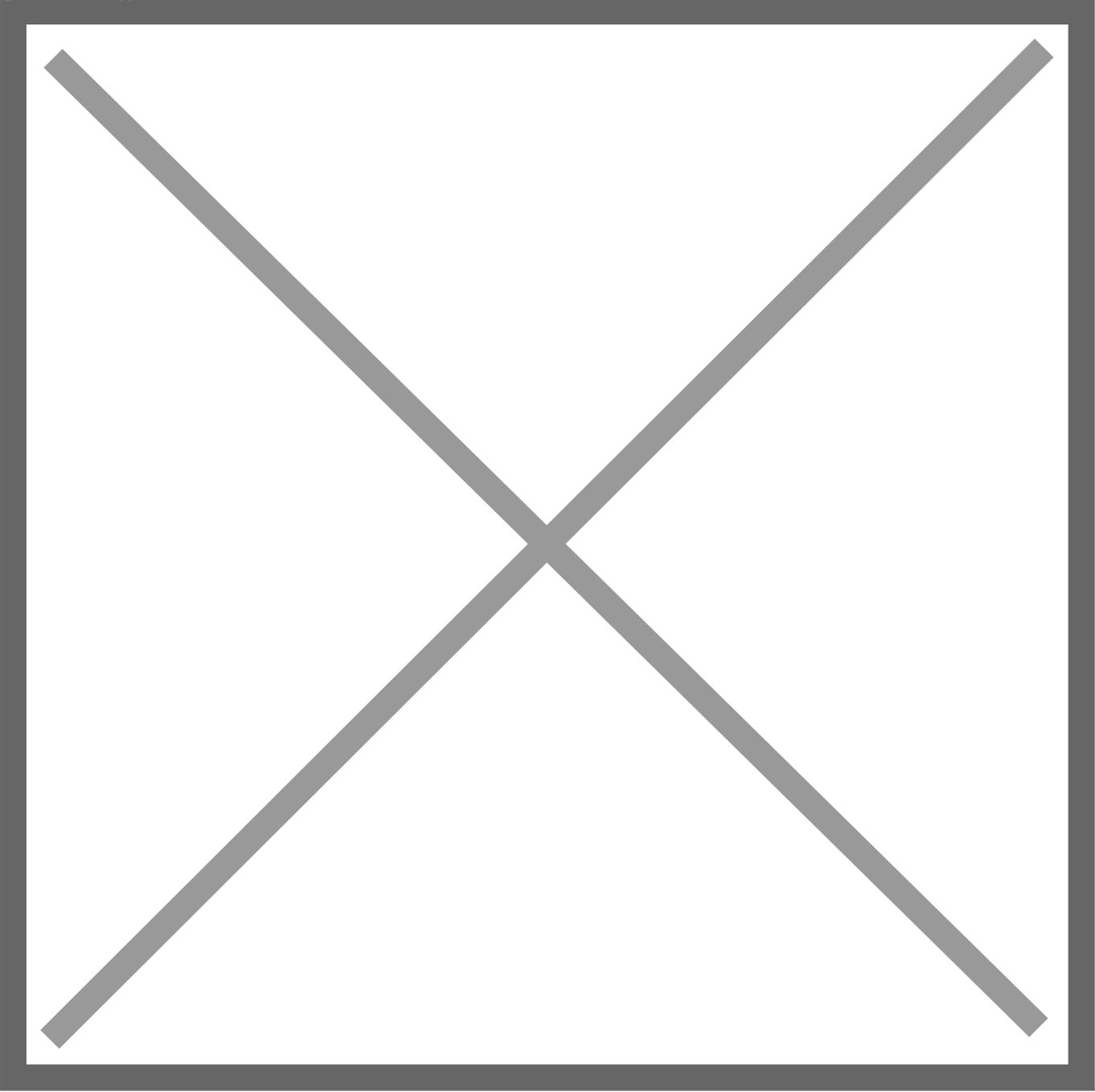
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AI is quickly finding solid feet in China, benefitting also from a favorable sociopolitical environment. Chinese people, especially the new generations, are very tech-savvy and rather welcoming of new technologies. They are also much keener to share personal information online compared to their western counterparts, fueling Chinese AI start-ups with a huge amount of data they can use to test and refine their technology.

By Domenico Di Liello

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China has clear ambitions to become a global AI superpower. In Beijing's plans, China will have reached and surpassed the United States at the forefront of AI innovation by 2030, securing its leading role in the sector worldwide.

To prove their determination, PRC's planners have drafted dedicated policies, set up a state-owned VC fund of USD 30 billion and urged local governments to do the same (Shanghai has recently announced a fund of USD 15 billion, Beijing has committed to USD 2 billion investment while Tianjin has plans to roll out a USD 15.7 billion fund to speed up the development of new generation AI).

China's strong commitment to AI cannot be understood without considering the country's position in this critical phase of its development. After four decades of sustained economic growth, the PRC is now face the issues of sluggish productivity, an aging population, a shrinking labor force, severe environmental pollution, and imbalances in wealth distribution. To add to this complexity, international strains, such as the recent trade tensions with the United States of America, have weighed down an already slowing GDP.

To address its domestic challenges and to sustain its plans of global leadership, Beijing has embarked on massive economic structural adjustments, from reducing its reliance on exports and investment, to bolstering domestic consumption (which means enhancing the national social safety net) and upgrading its industrial system towards a more high-added value production.

In each of these single areas, Artificial Intelligence is expected to bring major contributions. In the eyes of China's planners, AI is the enabler of the country's future economic development and, at the same time, a strategic imperative, the ultimate arena where China seeks to claim recognition and global leadership.

The history of AI in China

PRC's first efforts towards the development of AI can be somehow traced back to the late 1970s, when initial contributions to research began to appear. At the time, the focus was more on basic research in areas such as automated theorem proving and logic reasoning, but it gradually shifted towards big data and infrastructure to finally reach AI itself and IPR protection after 2017.

It is in that year that China's State Council unveiled the country's A [New] Generation Artificial Intelligence Development Plan (AIDP), a top-level blueprint mapping China's approach to developing AI research, technology and application. The plan, which echoes other important strategies such as Made in China 2025 and Internet+, draws the path for China to become a global

leader in AI by 2030, when the industry is expected to reach total value of USD 150 billion (EUR 134 billion).

The AIDP also sets out interim goals to be reached in the coming years, namely:

2020 – close the gap with the rest of the world in terms of overall technology and application of AI, making it a new important driver for future growth; · 2025 – achieve breakthrough in certain areas of AI research, and to become global leader in selected technologies and applications; · 2030 – become the overall leader in AI theories, technology and applications, guiding global innovation and achieving visible results in intelligent economy and intelligent society applications.

Soon after the unveiling of the AIDP, other Chinese ministries followed suit by issuing their own plans, while local governments all over the country began to fund AI ventures.

Results, so far, have been astonishing. In just a decade, the country has progressively moved away from the peripheral echelons of the AI developing countries, positioning itself at the core of AI innovation. According to a 2018 report on the status of AI in China published by the Tsinghua University, China's AI papers have increased from 4.2% of total world contribution in 1997 to a total of 27.8% in 2017, ahead of any other country globally.

Similarly, the PRC has also become the largest owner of AI patents worldwide, followed by US and Japan, especially in the areas of voice and image recognition, robotics and machine learning. Furthermore, the PRC now enjoys the world's second largest AI talent pool (18,232 or 8.9% of global total), behind only the US (13.9% global total).

Also, China is home to the second largest number of AI companies worldwide: there were 1,011 registered companies by the end of 2018, mainly concentrated in Beijing, Shanghai, Shenzhen, Hangzhou and Guangdong province. It is expected that this number will continue to rise in the near future, on account of robust political support and growing business opportunities. The AI industry is indeed growing at a fast pace: at the end of 2017, total market value reached RMB 23.7 billion (EUR 3.1 billion), following a 67% y-o-y increase, with the top three segments being computer vision (34.9%), voice (24.8%) and natural language processing (21%).

AI is quickly finding solid feet in China, benefitting also from a favorable socio-political environment. Chinese people, especially the new generations, are very tech-savvy and rather welcoming of new technologies. They are also much keener to share personal information online compared to their western counterparts, fueling Chinese AI start-ups with a huge amount of data they can use to test and refine their technology. This is something difficult to obtain by some western countries, especially those with a small population. Such a widespread attitude has produced a general acceptance and extensive support to the use of AI in the country.

In such an environment, Chinese AI start-ups have thrived with some of them already receiving global recognition. This is the case of SenseTime, one of the world's leaders in computer vision, or DJI, whose AI powered commercial drones have gained 74% of the world total market share.

With AI spreading to virtually every sector of the economy, we shall expect the insurgence of Chinese global leaders in many other downstream industries, including healthcare, finance,

education and security, environmental protection, urban operation, judicial service and retail, just to name a few.

Weaknesses, of course, do exist. If, as mentioned above, on the one hand China has the largest pool of AI talent worldwide, when it comes to top-tier talents, it is still the US that has the upper-hand. In addition, although China is showing strength mainly in AI applications, the same cannot be said on the front of core technologies, especially hardware and algorithm development.

It is worth to mention that, when it comes to R&D and knowledge production, much of the contribution is coming from universities and research institutions, whereas the input form AI companies is still lagging far behind that of their foreign counterparts. Even China's tech giants like Baidu, Alibaba and Tencent, do not perform as well in terms of AI talents, papers and patents compared to companies of the likes of Alphabet, IBM, Apple or Microsoft.

This means that opportunities lie ahead, especially in the macroareas of knowledge creation, technologies & data and Industry applications. To find specific prospects, however, EU SMEs shall first develop a sound understanding of the recent evolution of the AI industry and try to grasp its future trends. Starting by searching for the strengths and weaknesses in the upstream and downstream industries is advisable and strongly recommended.

Upstream and downstream strengths and weaknesses

From the upstream side, high level education, for example, is one area of opportunities. Research is the fuel for constant innovation in AI, and the role of universities and research centers is therefore paramount. A good percentage of China's top AI talents have studied and trained abroad, and the PRC has also published a significant number of papers in collaboration with other countries (USA, UK, Australia, Germany, Italy and France), signaling that cooperation at this level is not just welcome, but also needed. Advanced hardware is another source of potential opportunities. Although it might not be a typical industry for SMEs, companies could still find niches along the supply chain for such technology.

On the downstream side, we already mentioned AI is finding rapid adoption in healthcare, security, finance and education. Retail is also increasingly opening to AI, especially for facial recognition (see the 2017 opening of the unmanned Suning Biu store in Nanjing and Shanghai, which rely heavily on AI technology). However, there are segments that so far haven't received the same attention. Energy, for example, has been under addressed by AI specialists, and it is open to solutions from companies in this sector. Thorough research will reveal these and many other opportunities.

Strategies to access AI market opportunities

Accessing those opportunities could be challenging though. Foreign companies can be faced with issues at a regulatory and practical level. Restrictions and barriers to entry do apply, for example in the form of ownership requirements or access to financing, especially in those sectors deemed of special interest for the country. Partnering up with local companies already established in the field could help solve part of these issues and at the same time help foreign businesses tackle practical challenges such as access to data, setting up of local servers, opening offices in the mainland and others. Developing the market could be also another area where partnership with local Chinese

companies could be beneficial to foreign SMEs, considering that many state-affiliated entities will prefer to work with domestic companies making it difficult for foreign companies alone to supply products and services to them.