Building chain of medical AI innovations, Tencent establishes national new-generation medical imaging AI platform

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2018 China "Internet Plus" & Digital Economy Summit kicked off in Chongqing from 12–13 April. Tencent was approved to build an innovative, nationwide, new-generation artificial intelligence (AI) platform for medical imaging (*Figure 1*). Expediting the formulation of national AI strategies in the medical field via four dimensions—innovation and entrepreneurship, industrial cooperation, academic research and public welfare, it aims to establish an open platform where medical institutions, research groups, medical device manufacturers, AI businesses, IT vendors, tertiary institutions, charity organizations and so on can get together to promote the exploration and application of AI technology in medical imaging, auxiliary diagnosis and medical robots.

In November 2017, the Ministry of Science and Technology announced the first list of participants in the national new-generation medical imaging AI platform and made Tencent the official party to establish such platform. It is anticipated that, by 2020, the overall technology and application of AI in China will be able to catch up with world's advanced level. By 2025, there will be a major breakthrough in basic theory of AI. And by 2030, China will be on top of the world in the aspects of AI theory, technology and application and will play an essential role in AI innovation.

Mr. Guangyu Chen, the vice president of Tencent, expressed that he hopes the new-generation AI platform can serve as a "connector" that will build a chain of medical AI innovations, accelerate cross-border research of AI and medicine, and boost the overall constructive development of AI + medical industry (*Figure 2*).

Figure 1 The launch of the national new-generation medical imaging AI platform.

Chain building of medical AI innovations via four dimensions

According to Mr. Jia Chang, director of Tencent Internet Plus Medical Center, the project has immense advantage of resources as the platform has gathered 13 million partners. Further strengthened by the technological breakthroughs in medical AI of Tencent Miying, the new-generation AI platform will drive cooperation and innovation in four dimensions—innovation and entrepreneurship, industrial cooperation, academic research and public welfare.

In terms of innovation and entrepreneurship, working along with Tencent's "AI Accelerator", Tencent will dispense five major resources including AI technology, investment, mentoring, industrial resources and market, which will enable recruitment of AI entrepreneur students and development of medical AI products.

In the aspect of industrial cooperation, Tencent Miying has already set up medical AI laboratories with a number of

Figure 2 Speech by the vice president of Tencent, Mr. Guangyu Chen.

Figure 3 Guangyu Chen was appointed as one of the senior academic consultants.

national upper first-class hospitals, where medical experts and AI experts from Tencent have been collaborating to explore AI technology in medical application. Having this as the basis, the new-generation AI platform will further connect tertiary institutions, research groups, AI imaging teams and other units to make full use of existing techniques such as Miying engine, Tencent Cloud and AI techniques to provide more powerful and diversified AI technology for medical institutions, medical device manufacturers, IT vendors, video clouds, and AI businesses.

With regard to academic research, the AI platform will co-work with medical experts and academic journals across the world to expedite the development of researches relating to medical AI by means of joint research projects, cutting-edge AI technology and cross-industry academic research. Experts such as Zhaoshen Li, academician of the Chinese Academy of Engineering and director of the National Clinical Research Center for Digestive Diseases; Youlin Qiao, professor of the Chinese Academy of Medical Sciences and Peking Union Medical College; Jiafu Ji, dean of Peking University Cancer Hospital and Peking University School of Oncology; Zhongxi Zheng, professor of West China Medical Center of Sichuan University and deputy director of China Association for Medical Devices Industry—Pathology Branch; and Zhengyu Jin, chairman of Society of Radiation, Chinese Medical Association and director of Department of Radiology, Peking Union Medical College Hospital, were appointed to be Tencent Miying's senior academic consultants (*Figure 3*). Besides, Tencent announced it has reached a strategic cooperation with AME Publishing Company, an international medical journal publisher, to jointly publish academic journals focusing on medical AI research to facilitate the development of such research. Previously, Tencent AI Lab had reached another strategic cooperation with Springer Nature, a leading international academic and education publishing group, to promote interdisciplinary research in the field of AI + healthcare. Through scholarships and industry-academy-research exchanges, global scientific research resources can be integrated to support interdisciplinary cooperation between medical industry and AI research.

For public welfare, after the implementation of the first national screening of early esophageal cancer co-organized by Jieyang City Government, Tencent Foundation and Jieyang City People's Hospital in December last year, Tencent will further promote the new model of "technology + public welfare". Recently, Tencent has teamed up with the world's leading pharmaceutical company, AstraZeneca, and other partners to establish a Gastrointestinal Cancer Center (GICC) platform. Under the guidance of Wuxi Municipal Government and Wuxi City Health Planning Commission and led by Prof. Zhaoshen Li, early screening for gastric cancer is to be implemented and launched in a wide range of public hospitals.

New medical ecology brought by opening up technology

In August 2017, Tencent launched "Tencent Miying", the first product that uses AI technology in the medical field. Led by Tencent Internet Plus, it was established by aggregating the power of several top Tencent AI teams including AI Lab and Youtu Lab, and by combining AI-leading technologies such as image recognition, big data processing, and deep learning with medical studies to assist doctors in disease screening and diagnosis. In just half a year, Tencent Miying has expanded its application from a single disease to multiple diseases—from early esophageal

cancer screening to screening of pulmonary nodules, diabetic retinopathy, gastric cancer, breast cancer and others. It has even been implemented nationwide in more than 100 upper first-class hospitals which, on the one hand, helps doctors enhance diagnostic efficiency and accuracy, and, on the other hand, expedites the development of AI technology and hospital capacity.

At the just-concluded national "Lianghui", premier Li Keqiang emphasized in the "Report of the State Council" the importance of the development and application of new-generation AI and the promotion of "Internet Plus" in various areas including medical care, pensions and education. Ma Huateng, chairman and chief executive of Tencent corporation, also actively proposed to accelerate the application of digital technology and to facilitate balanced development of medical resources and service capabilities. He suggested promoting AI-assisted diagnosis primarily in medically underdeveloped regions. By means of technologies like AR, VR and live telecommunication, doctors in less developed regions can remotely consult and communicate with experts in that field to balance the allocation of medical resources in China.

We believe this new-generation AI platform will further open up technology and resources to build the chain of medical AI innovations, and create a win-win Internet plus new medical ecology.

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