

Former Siemens executive now a frontline “hero” in the coronavirus fight



In 2015, 45-year-old Wu Wenhui left his executive job at Siemens and returned to his home in Jiangxi Province to start a new business, in the hope of helping protect grassroots patients from missed diagnoses and misdiagnoses.

Wu Wenhui

EMBA2005

Founder and CEO of Jiangxi Zhongke Jiufeng Intelligent Medical Technology (JF Healthcare)

Starting a business at middle age to realise a life-long dream

Before founding JF, Wu worked at Siemens for 20 years and made it to the position of President of Siemens Healthcare North East Asia (including Greater China and South Korea).

In 2015, the 45-year-old quit his executive job and returned home to start a business. Using AI interconnected technology, JF empowers China's healthcare at the grassroots level. By simply buying JF's diagnosis services at cheap prices, township health facilities can read chest X-rays and other medical images with machines for diagnosis. Not only does this reduce costs, but it also saves people the trouble of looking around for a doctor.

Wu classified the entrepreneurs into two types. One is people in their 20s who start businesses for a simple dream. The other is because of the missions they are undertaking. He said he belongs to the second type, because "there is one thing that must be done".

Wu's mother used to be the head of a health facility in their hometown. Amid the lack of doctors and medicines at the grassroots level, she led efforts to make reagents through distillation from Heartleaf Houttuynia Herb, a Chinese medicine known to be able to relieve pneumonia symptoms, to help save money and cure illness for fellow villagers. Since childhood, Wu had witnessed his mother's efforts.

In 1995, with a cerebral hemorrhage, his mother needed to have surgery. However, there was no CT equipment in the county. Moreover, provincial hospitals were more than 100 km away, and 3-4 hours of driving was needed on gravel roads. Finally, his family gave up. When Wu rushed back home from his overseas trip, his mother was already in a coma, and passed away the following day. Ten years later, while the county was equipped with CT equipment,

it failed to diagnose his father's medical condition timely. It was not until a pathological biopsy that his father was found to be already in the final stage of nasopharyngeal carcinoma.

These two incidents had a large impact on him. Until then, he had been working in Siemens' non-healthcare divisions. He made up his mind, "I must squeeze into the healthcare division."

Starting out in the after sales service department, he kept innovating Siemens' services and even created a top business for the company. He was promoted many times for his outstanding performance. From after-sales to pre-sales, then to marketing, and finally to general management roles, he rose through the ranks to become President of Siemens Healthcare North East Asia.

"Though I've been doing high-end work at the company – that is, dealing with Grade A tertiary hospitals, I've had a complex in my heart", he says. "Like my parents, many patients at grassroots hospitals could face missed diagnosis and misdiagnosis, and I'm thinking how to help these people with technology."

"In my last four years at Siemens while I was CEO, I thought I still had a dream," he says. "Not exactly a dream; instead, it was a sense of mission."



Unexpected challenges

Wu started his entrepreneurship journey in 2015.

In his opinion, imaging is the biggest entrance to AI-empowered health care. So he made diagnosis the company's entry point, in the hope of helping township health facilities read medical images and detect illnesses quickly and accurately with technology.

Despite his background in healthcare, and although he has done tests on technical feasibility, he found he had underestimated the challenges when really starting a business.

"AI sounds high-end, elegant, and classy, but its implementation in the healthcare sector is very difficult," he says. "Many people wonder, given that a computer has beaten a human at Go and face recognition technology has been widely used, how doctors can compete with computers in reading images. But actually, this sector is very challenging. By the end of 2019, there were no Class III medical device licenses in the world as an application of AI in medical imaging diagnosis."

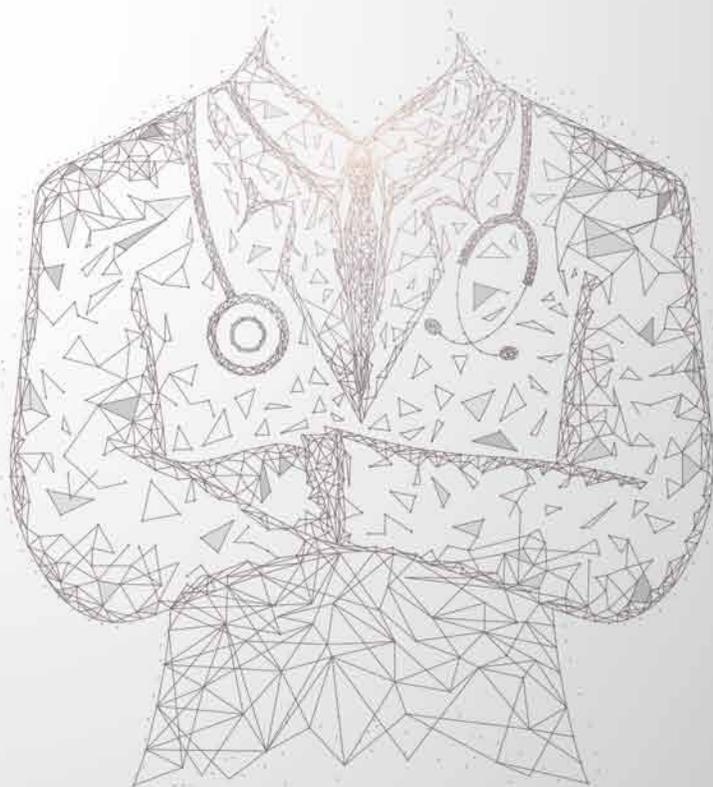
He further explains that these challenges are mainly in two areas.

1) Rules of the game. Unlike Go, which has clear rules, or a face, which has distinct features, chest imaging has no certain characteristics. Shadows, sharp points or a hole in an image does not necessarily represent a disease. Different diseases can have the same symptoms, while one disease can have different symptoms.

2) Gold standards. Who has the say whether a feature represents lung cancer? Machine learning makes conclusions based on the data people enter. But there is another problem in the field of medicine. That is, it is hard to set gold standards.

Apart from technology, grassroots promotion is also a problem. For a time, he met with over 100 investment firms and got rejected. On one hand, investors considered that with low revenues, township health facilities could not afford AI software fees. On the other hand, it was also unclear whether leading technologies could be developed in cooperation with township health facilities.

He admits that in the early years of his business, he thought only about how to address grassroots health issues, and did not think about whether the company could make profits. He was a "very unprofessional entrepreneur".





Taking top spot in an international competition

Technical and promotion problems had been troubling Wu. He did not feel relaxed until 2018, when JF's team was ranked first on Stanford's MURA leaderboard in 2018.

“This suggests that we can reach international advanced levels through rigorously trained algorithms even if we use the data that township health facilities provide and the imaging grassroots hospitals do.”

“In tertiary hospitals, which use Siemens equipment, imaging is very clear. If we use their data, we'll get better results, despite worse robustness (fault tolerance). In grassroots hospitals, which do not use imported equipment, imaging is not of good quality. If a good algorithm is used for poor imaging, the quality will decrease, making imaging hard to read. Conversely, if an algorithm works well with poor imaging, it will make it easy to read quality imaging,” he says.

In 2019, the JF team once again topped Stanford's CheXpert leaderboard. The competition was very stiff, as evinced by the participation of over 100 teams, including teams from Microsoft, IBM and other international

companies. JF's victory has further confirmed its research strength in AI.

JF has also found a breakthrough in commercialization. As health facilities cannot afford AI software fees, JF sells diagnosis services to them – it charges a fee of around 10 yuan for each service. For JF, there are no marginal AI software costs but only R&D costs. Every year, about 4.4-4.5 billion diagnosis services are needed from China's grassroots health facilities. This can ensure that JF makes huge profits through the provision of services.

Technical problems have been solved. Mainstream funds have been brought in. In Wu's words, “JF's first survival challenge has been resolved.”

Currently, among JF's team are both AI algorithm scientists and full-time practitioners. China's top radiology professors lead a team full time to define the standards for disease diagnosis. Having processed over 1 million chest radiographs, JF now has the largest chest radiograph database in the world.

Changing yourself

“*In China, I’m no match for many entrepreneurs out there. I can’t even be their student. But in terms of helping China go global, I feel I have a mission to help a Chinese company survive or be a shining ‘star’ amongst national brands.*”

When it comes to how he feels, Wu says the change from an executive to an entrepreneur is a big one. “If I become an investor, I probably won’t invest in entrepreneurs who were executives. It is too hard. You have to ‘change yourself.’”

In his view, executives have resources available to them, and are used to developing strategies and plans. By contrast, entrepreneurs need to survive with limited resources, put technology in place, and solve problems. These are challenging for executives. He says, “It will be hard if you can’t get through these.”

He talks about changes before and after his business venture. Previously he flew first class; now he flies economy and high-speed rail. He previously stayed in five-star hotels; he now only cares about whether a hotel is clean. Previously he had a bunch of assistants; now he rolls up his sleeves and does it himself. But he adds that if executives can change themselves, they will have good development.

As an entrepreneur born in the 1960s, he thinks his generation has a strong sense of social responsibility and mission to make China more international.

“In China, I’m no match for many entrepreneurs out there. I can’t even be their student. But in terms of helping China go global, I feel I have a mission to help a Chinese company survive or be a shining ‘star’ amongst national brands.”

He says times have created rare opportunities for entrepreneurs. Looking at the big picture, China has offered policy support for entrepreneurs by encouraging entrepreneurship and innovation. Furthermore, promotion of tiered diagnosis and treatment has created room for technology firms such as JF to empower the grassroots. Another policy is targeted poverty alleviation. “Poverty relief is unprecedented and real. Now, about half of people fall or slip back into poverty because of illnesses. Combating the problem of healthcare is an uphill battle in the fight against poverty.”

In 2019, JF was selected for Xinhua News Agency’s National Brand Project. “The whole Chinese society is moving forward. What influences me the most is China’s reform & opening-up and internationalisation. Going forward, China will be more international, and JF will be an international company.”

Giving a passing grade after serving more than 100 million people

In the past two years, JF has been putting “digital lung technology” in place, as part of plans for work in the respiratory disease area.

Wu explains that respiratory disease is one of the most common system diseases, while lung cancer is one of the most common cancers. Respiratory cancer has a long course of development. For instance, the impact of smog is still at least 5-10 years away. The diagnosis of respiratory disease depends on imaging. So JF’s technical buildup can benefit more people.

Asked to what extent JF can be called a success, Wu says, “First, it must have addressed health issues on a massive scale for ordinary people, with strong clinical value added. If a number is needed, I think the number of people served has to be about 100 million. Second, from the perspective of a great company, it must be a Chinese company with global footprint.”

“By then, I can give myself a passing grade,” he says with a smile.

Reference:

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