

# CHINA

BUILDING THE NEW ERA | IN OUR TIME

## Robotic knees earn amputee inventor fame

Company seeks funding to make cost of devices more accessible

By CHENG SI in Beijing and YANG JUN in Guiyang

Sun Xiaojun, an amputee who made himself a robotic knee, is now working to ensure that his invention is accessible to other people with disabilities to improve the quality of their lives.

Born in Shiqian county in Southwest China's Guizhou province, Sun was the naughtiest student in his class until he broke an ankle and was diagnosed with osteomyelitis, an inflammation of the bone, when he was 9.

His right leg was later amputated as a result of the condition.

"It was really unfortunate for me and my family. I was naughty and disliked studying before the amputation. But my father told me that I could only make a living by studying because I was not able to farm like him," the 34-year-old said in a recent interview with Yishou, an online video platform.

Even though his family wasn't able to afford to buy him a prosthetic replacement, the young boy refused to surrender to his fate and made up his mind to study hard.

In 2006, Sun enrolled at the Huazhong University of Science and Technology in Wuhan, Hubei province, to major in material forming and control engineering.

He made headlines when he registered at the university walking with a crutch. In 2009, he won the

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Sun Xiaojun, BionicM founder

opportunity to continue his studies at Japan's Tohoku University.

"I started to wear a prosthesis two years after I began studying in Japan. I had never worn one before, so it took quite a long time to get used to it," he said.

The experience wasn't very comfortable because the knee didn't bend, and it took Sun time to go up and down stairs. He would sometimes fall over when he tried to walk too fast, which made him feel awkward. He came up with the idea for a smarter prosthesis by applying robot intelligence in 2013 while he was studying for his master's at the University of Tokyo.

He got a job at Sony after graduating, but he gave it up to pursue a doctorate focusing on humanoid robot research at the university in 2015. He founded BionicM in Shenzhen, Guangdong province, in 2018, so that his inventions could help more people with disabilities enjoy life.

Sun's robotic prosthetic knee quickly earned him fame and won him the Red Dot Best of the Best award in 2020.

He said that the biggest challenge in creating the robotic knee was how to coordinate between the

body and the prosthetic. "Walking is an unconscious movement. It's difficult to make prosthetics understand how that works."

Most artificial limbs on the market are made to work like bones and ankles. Sun's invention works a bit like adding muscle to the mechanical parts.

"The prosthesis we've created has a kind of mind of its own, and allows people to move by sensing their intentions," he said.

"I myself use a prosthetic limb, and I'm also a researcher. There are about 4 million people in China whose lower limbs have been amputated," he added. "The cost of an ordinary prosthesis is around 60,000 to 100,000 yuan (\$9,400 to \$15,700), which many people can't afford, so they use crutches, instead."

Sun said the market is a niche, and most prosthetics are produced in Europe. "I didn't start my company for the money, but to make a product that is useful to society. Amputees have a basic need to walk on two legs," he said.

Sun said that the robotic knee his company produces is priced at around 300,000 yuan per pair, while similar products sold elsewhere average around 800,000 yuan.

Admitting that this is not ideal, he said that his robotic knees are still in small-scale production, resulting in high costs. He hopes that by raising more capital, he'll be able to expand production and lower costs to make his devices more widely affordable.

Zhang Chi contributed to this story.

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Visitors take photos in front of a souvenir shop in the Old Town of Kashgar, Xinjiang Uygur autonomous region, in July last year. MA KAI / XINHUA

## 'Drifters' breathe life into old city

URUMQI — The ancient part of Kashgar city, Xinjiang Uygur autonomous region, is home to one of the largest surviving concentration of earthen buildings in the world.

Over the past decade, a group of young newcomers has settled there and injected vitality into the roughly 400-year-old town.

Guoguo, a former soft furnishings designer from Shanghai, is one of the "drifters".

After visiting Kashgar on a sketching expedition in 2018, he fell in love with the Old Town of Kashgar and decided to stay.

Now, he and his wife run a store selling self-designed handicrafts made using traditional arts and patterns.

He sees Kashgar, which was on the ancient Silk Road, as a living museum with a heritage that draws on both East and West.

His understanding of the city is evident in his art, which includes Uygur patterns printed on canvas, drawings of traditional dwellings on paper made of mulberry bark,

postcards of local musicians playing the *rawap* — a stringed instrument — and the tambourine, and clay figurines of middle-aged Uygur men.

In 2019, together with other artists he founded the Urban Sketchers of Kashgar, a nongovernmental organization that aims to portray the changing appearance of the Old Town. Nearly 300 people have joined the organization, of which more than 100 are based in Kashgar.

In the olden days, more than 200,000 residents were crammed into basic, disaster-prone mud-brick dwellings that covered an area of about 8 square kilometers.

The Old Town's face-lift began in 2010, when local authorities invested over 7 billion yuan (\$1.1 billion) in renovating the historical district.

Within the space of five years, 49,000 dilapidated houses were fixed up while preserving their original aesthetic.

Today, local residents not only have a safer, more comfortable life, but the renovations have boosted

tourism and attracted new residents, like Guoguo.

Li Jianhui, who comes from Beijing, opened a 10-room hostel in Kashgar last year. "It's rare to have such a well-preserved city that embodies the cultural elements of ethnic minority groups in China," Li said.

Yu Xiao and Wang Yunwang, from the central provinces of Hubei and Hunan, respectively, are a couple. Yu runs a photography service for tourists, while Wang is a designer making traditional gold and silver jewelry.

"We see great potential for the tourism industry in the ancient city," Yu said.

In the first 11 months of last year, Kashgar received nearly 2.3 million tourists, up 183 percent year-on-year, with tourism revenue soaring by a whopping 486 percent. Many local residents have converted their houses into bed-and-breakfasts, restaurants or handicraft shops to ride the burgeoning wave of tourism.

XINHUA

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2022 Yellow Emperor to be honored in Xinzheng with ancient ceremony

2022年4月3日 / 周日

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April 3, 2022/Sunday

Xinzheng, Zhengzhou, Henan, China