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ScienceFaces

A running battle to secure the cyberworld

Internet security expert urges vigilance as mobile computing becomes more ubiquitous

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A time when children were asked not to study, but to play: That was the "parallel universe" in which Professor Robert Deng grew up, during the height of China's Cultural Revolution in the 1960s and 70s.

He said: "We went to school every day but we did not study. Instead we were asked to play or do political studies," said the 59-year-old. "If you wanted to study, you got criticised in school."

When the Cultural Revolution ended in 1976, university admissions were reinstated and Prof Deng, who had just finished high school, decided to apply.

He did not have textbooks, and had to rely on whatever copies of examination papers he could gather from friends. But, despite the lack of resources, he passed the national examinations and went on to major in electrical engineering and later did a PhD in error correction coding and computer networks.

And, as they say, the rest is history.

Today, he is one of the world's leading experts on cyber security. Last month, the faculty member of the Singapore Management University's School of Information Systems, was made a fellow of IEEE, the world's largest professional body for the advancement of technology.

Prof Deng, who is married and has two sons, has 26 patents and has published more than 300 papers on networks, data, privacy and security.

Among his accomplishments was the co-development of a suite of techniques to authenticate and encrypt multimedia content, which is now used internationally.

In 2013, he was in a team of eight researchers that found three security flaws in tech giant Apple's iOS operating system used in its mobile phones and tablets.

His efforts in cyber-security research have won him numerous accolades, including the Lee Kuan Yew Fellow for Research Excellence from SMU in 2006, and the University Outstanding Researcher Award in 1999 from the National University of Singapore, where he taught for three years.

Prof Deng was made director of the Secure Mobile Centre, established in February last year and funded by the National Research Foundation, to develop technologies and solutions to strengthen the security of mobile computing.

He is concerned that companies do not take cyber security seriously enough. He said: "They worry more about their bottom line than spending money on security.

"They care about security only when their systems get attacked and their business suffers, or when their hand is forced by regulations."

That can no longer be the case as mobile computing becomes more ubiquitous, he said. These days, there is a computer in virtually every person's pocket. A person can do Google searches, update his location on Facebook and shop online on the go, which allows hackers to create a digital passport of a victim just by tracking his online footprint.

With the trend of permitting personal smartphones at the workplace, both private and corporate data is at stake when people lose their mobile phones, or when the phones get hacked, he said.

Prof Deng says the pursuit of information security is like the never-ending "struggle between police and thieves". ST PHOTO: LIM YAOHUI

DARK CLOUD

If someone successfully hacks into the traffic system or into a nuclear plant, we will be in big trouble.

PROFESSOR ROBERT DENG, on heightened risks, with the rising number of things connected to the Internet

And with so many things linked to the Internet, human life is at risk, too. "If someone hacks into the traffic system or into a nuclear plant, we will be in big trouble."

Many experts believe a major cyber attack is inevitable. That is why Prof Deng and other experts around the world are developing new technologies to strengthen cyber security.

One project he is working on is an authentication system that detects a person's face and not just a picture of it. There are now ways to detect the blinking of an eye, although that too can be faked.

"We want to create a low-cost way to overcome that," he said.

Meanwhile, people can do their part by using strong passwords, anti-virus software and being careful when connecting their devices to cloud storage systems.

But the pursuit of information security never ends.

"It is like the struggle between police and thieves," said Prof Deng. "I can't just say 'OK, I have developed a solution, I can go to sleep now.' It is a never-ending process."

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