A series of online attacks on Google and dozens of other US corporations have been traced to computers at two educational institutions in China, including one with close ties to the Chinese military, people involved in the investigation said.

They also said the attacks, aimed at stealing trade secrets and computer codes and capturing the e-mails of Chinese human rights activists, may have begun as early as April, months earlier than previously believed. Google announced on Jan. 12 that it and other companies had been subjected to sophisticated attacks that probably came from China.

Computer security experts, including investigators from the National Security Agency, have been working since then to pinpoint the source of the attacks. Until recently, the trail had led only to servers in Taiwan.

If supported by further investigation, the findings raise as many questions as they answer, including the possibility that some of the attacks came from China but not necessarily from the Chinese government, or even from Chinese sources.

Tracing the attacks further back, to an elite Chinese university and a vocational school, is a breakthrough in a difficult task. Evidence acquired by a US military contractor that faced the same attacks as Google has even led investigators to suspect a link to a specific computer science class, taught by a Ukrainian professor at the vocational school.

The revelations were shared by the contractor at a meeting of computer security specialists.

The Chinese schools involved are Shanghai Jiaotong University and the Lanxiang Vocational School, according to several people with knowledge of the investigation who asked for anonymity because they were not authorized to discuss the inquiry.

Jiaotong has one of China's top computer science programs. -Lanxiang, in Shandong province, is a huge vocational school that was established with military support and trains some computer scientists for the military. The school's computer network is operated by a company with close ties to Baidu, the dominant search engine in China and a competitor of Google.

Analysts differ on how to interpret the finding that the intrusions appear to come from schools instead of Chinese military installations or government agencies. Some analysts have privately circulated a document asserting that the vocational school is being used as camouflage for government operations, but other computer industry executives and former government officials said the schools may be cover for a "false flag" intelligence operation being run by a third country. Some have also speculated that the hacking could be a giant example of criminal -industrial -espionage, aimed at stealing -intellectual -property from US technology firms.

Spokesmen for the Chinese schools said they had not heard that US investigators had traced

the Google attacks to their campuses.

When asked about the possibility, a leading professor in Jiaotong's School of -Information Security -Engineering said in a telephone interview: "I'm not surprised. Actually students hacking into foreign Web sites is quite normal."

The professor, who teaches Web security, asked not to be named for fear of reprisal.

"I believe there's two kinds of situations. One is it's a completely individual act of wrongdoing, done by one or two geek students in the school who are just keen on experimenting with their hacking skills learned from the school, since the sources in the school and network are so limited. Or it could be that one of the university's IP addresses was hijacked by others, which frequently happens."

At Lanxiang Vocational, officials said they had not heard about any possible link to the school and declined to say if a Ukrainian professor taught computer science there.

A man surnamed Shao, who said he was dean of the computer science department at Lanxiang but refused to give his first name, said: "I think it's impossible for our students to hack Google or other US companies because they are just high school graduates and not at an advanced level. Also, because our school adopts close management, outsiders cannot easily come into our school."

Shao acknowledged that every year four or five students from his computer science department were recruited into the military.

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