

Local IT firm keeps eye on what's moving and what isn't

Technology | Worried about tsunamis? Snow load on your house? Gemini Navsoft has it covered

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Some things such as dams, dikes, skyscrapers and snow-laden roofs should never move.

Other things have to be moved carefully such as giant cranes lifting cargo containers.

Fredericton start-up company Gemini Navsoft Technologies Inc. makes software that uses global positioning satellites to measure movements down to the millimetre.

"We just finished a crane auto steering project in Florida," said Jason Bond, a graduate of the University of New Brunswick and manager of engineering at Gemini, in a recent interview.

"We're actually using steering wheels but not in the conventional sense. There are some fancy algorithms that are used to steer that crane based on the GPS system."

In the case of the Florida project, a crane lifts containers off a train and onto transport trucks, said Bond, who joined the company in 2010.

"The wheeled crane is actually moving up and down this stretch of rail line," said Bond.

"The GPS basically takes the thinking out of the crane operator steering the machine. He basically just says go and the crane is driven up and down this stretch of track.

"It increases the efficiency of their operations."

Gemini Navsoft is a spinoff company from the University of New Brunswick.

It was created in 2008 by Don Kim, who's the chief technical officer.

Kim is an adjunct professor and a senior research associate at the GPS Research Group, which is part of the university's department of geodesy and geomatics engineering.

Early in the decade, a port company in South Korea hired Kim to develop the guidance software to use on



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Global markets: Jason Bond, manager of engineering with Gemini Navsoft, left, and Don Kim, chief technical officer, are shown in their Fredericton office.

cranes that unload ships.

Previous crane guidance systems used painted lines that can be eroded by weather.

Kim said the company's GPS crane auto-steering system is accurate to within one centimetre and is much more accurate than a crane operator's eyes.

Another version of the software from Gemini is also used on the Macataquac Dam, which has a problem with concrete expansion.

The latest version can measure movement down to the millimetre, said Kim.

In April, Gemini also signed a contract with the government of South Korea to take part in a three-year

study to use its software on tsunami ocean detection buoys.

"It is the same type of technology," he said.

Kim said Gemini software can measure movement in three directions unlike other systems.

"Some sensors only look at one direction," he said.

Bond said the software can get down to one millimetre in accuracy in long-term monitoring situations where time is on their side to process the data.

"In dynamic applications you don't have time," he said.

"We are looking at different applications, including dam monitoring and dikes and levees. It's all about advanced warning ... to predict when

something may happen out of the ordinary."

The company is working on a monitoring project involving the dikes in New Orleans, said Bond.

Gemini is a privately-owned company. It has four employees but the principals say there is a lot of potential for expansion.

"When you consider dams alone, there are thousands in North America," said Bond. "There is potential for monitoring bridges and buildings.

"Look at this past winter, for example, and the collapse of roofs. At the Regent Mall it was a snow-loading issue."

Kim said the company's potential global market also includes thousands of buildings in earthquakes zones.

Bond said in the future the technology will be affordable for the average homeowner worried about how much snow is on the roof or whether big ocean waves are moving the foundation of their summer cottage.

Kim said on the auto-steering side, their technology could one day be used to remotely operate lawn mowers and snow blowers.

He said the company could go public in about five years and might open offices in Halifax and Boston.

But Gemini's headquarters will probably stay in Fredericton because the company is hiring graduates from UNB, said Kim.

"We need more scientists and engineers," he said.