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EDUCATION

Some take the tech route to stock market success

By BRAD HEM Copyright 2009 Houston Chronicle

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Brett Coomer Chronicle

University of Houston-Clear Lake professor Gary Boetticher is offering a graduate-level financial data-mining course.

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Armed with no more than a basic understanding of the markets or finance, Quan Nguyen managed to turn \$100,000 into more than \$63 million in less than three years.

The money was fake, but the appreciation was real as part of a computer science class project at the University of Houston-Clear Lake, where he is a graduate student. His model for buying and selling futures was applied to actual market data from 2001 to 2003. In theory it would work again in the real world today.

Nguyen, 27, is a part of a growing group of students and professionals with math, physics, statistics, engineering or computer science backgrounds who are applying their skills to the financial markets with increasing success — often to the consternation of their business-major counterparts who bristle at the idea of someone who doesn't understand the markets profiting from them.

Computational finance and its close relatives, financial engineering and financial data-mining, have been

around for a few decades. In the early years, only the big investment firms could afford the computing power to apply complicated formulas to millions or billions of computations. Now decent laptops can do the job.

Combine all those gigahertz and gigabytes with tales of math and computer geeks cashing in their models for millions of dollars, and it's easy to see why more students like Nguyen are taking the classes.

"We have this course that we teach at Rice, and it is chock-full of techies," Rice statistics professor James Thompson said. "Computer scientists, engineers, physicists, mathematicians. We are not well-liked by the business finance academic community. It's very hard for them to

accept it. It's a little threatening to them.”

Varying quality

Darrell Duffie, a Stanford University finance professor and president of the American Finance Association, acknowledged some on the business side look down on computational finance, though he said he is not one of them. The computer models have their place, and the ones rooted in math and statistics are usually better than others that twist economic theory or reinterpret what motivates the markets, he said.

“There is work of varying quality,” he said.

While traditional traders focus on financial and economic patterns and information to decide which trades to make, those in computational finance watch technical patterns and focus more on when to trade, said Gary **Boetticher**, a computer science professor at UH-Clear Lake. After running a trading project in computer science classes for the last few years, **Boetticher** is offering the school's first graduate-level financial data-mining course this semester. About 15 students have enrolled, he said.

Just three Rice students made computational finance their minor in 2006, said Katherine Ensor, director of Rice's Center for Computational Finance and Economic Systems and chair of the statistics department. This year, she expects closer to 15. Rice also has funding for two computational finance doctorates a year but would produce more if the money were there, she said.

“Our graduates have been highly sought after,” she said.

The ongoing financial meltdown may dampen demand for graduates with financial degrees, but students are flocking to computational finance classes at Rice, UH-Clear Lake and the University of Texas at Austin, school officials said. Financial firms have snapped up grads and paid handsomely for professors' research.

Seeking a patent

Thompson, who has applied his models to such different realms as cancer treatment and quality control, recently leased an investment formula he created to a hedge fund. He declined to divulge the name of the buyer or the selling price. He said he has applied for a patent on it.

Forget about asking for the contents of the formula. Secrecy is standard in the industry because of the big money that follows the research and models. Nguyen's was based on an artificial neural network that “learned” as it went when to buy or sell futures.

“The best work is probably not being published for reasons that you can imagine,” said Stanford's Duffie.

Even Nguyen, the grad student, wouldn't say what his school-project model looks like because it could be valuable in the real world, though he hasn't put his money where his math is — yet.

“Maybe I will try it later when I have money,” he said.

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