

\$100,000 Siemens' Team Scholarship Winner



The Team: Kevin Chen, Sean Karson, and Dan Liu

Senior **Sean Karson** and his team recently won the prestigious National 2009 Siemens Competition in Math, Science & Technology held at New York University on December 6. Karson and his team won \$100,000 in scholarship money to the college of their choice.

Sean is the first Trinity Prep student and the only student in the Florida to earn such distinction in the annual Siemens competition, the nation's premier high school science competition. His team's initial qualification as regional team finalist in October and their win at University of Texas, Austin, earned them a total of \$3,000 in individual scholarship awards and \$2,000 for their respective high schools to support math, science, and technology programs.

Sean is part of a three-person team who presented their mathematics research project, entitled "Relating Missing and Decycling Edges in Directed Graphs", to a team of expert judges from the UT academic community as part of the Regional Two Finals. Sean and his team constructed a poster about their project, presented a 12-minute power point to the judges, and then answered questions from the judges for 12 minutes as part of the competition.

They presented the same format for the finals in New York winning as one of six regional teams competing for scholarships ranging from \$10,000 to the top prize of \$100,000.

Their project earned considerable praise, and Dr. Haskell Rosenthal, UT's John T. Stuart III Centennial Professor Emeritus in Mathematics, said, "The team's work was truly impressive in that it focused on a topic in pure mathematics. With new and delicate techniques, they have advanced the infrastructure and knowledge of graph theory by providing better bounds, which is of fundamental importance to the mathematics community." He added, "The depth of knowledge was remarkable, and their work was on the same level of that of a Ph.D."

They began their project during the summer while attending Texas State University's Honors Summer Math Camp, one of the

top 6 programs in the country and has been recognized by the American Math Society Epsilon Fund. They were mentored by Dr. Jian Shen, Texas State Mathematics Professor. Team members included Sean; Dan Liu, a junior at the Liberal Arts and Science Academy in Austin, Texas; and Kevin Chen, a junior at William P. Clements High School in Sugar Land, Texas.

Siemens officials recently noted that "the mathematics team research project has the potential to increase efficiency in real world networks by establishing an upper bound of the minimum number of connections that must be removed to destroy all cyclic pathways in systems like the World Wide Web and transcontinental trade routes."

Texas State Professor, Max Warshauer describes Sean "as one of the top students our program has had. He has the determination, persistence, and ability to make significant contributions in math and science. He is a star who has exceptional potential to do absolutely outstanding work." Warshauer is a Regents Professor of Mathematics at Texas State, and he is the director and founder of Texas Mathworks.


Attached is an [abstract of the paper](#) and a few interesting links:

http://www.siemens-foundation.org/pool/siemens_competition/ws-sf_announcement_release10_23final.pdf

<http://www.txstate.edu/mathworks/about/news/siemensCompetition2009.html>


http://www.siemens-foundation.org/pool/siemens_competition/regional_finalists_website_listing_2009.pdf

To view the team's presentation to the judges, click on the image below.



Sean Karson, Trinity Preparatory High School, Winter Park, FL; **Dan Liu**, Liberal Arts and Science Academy High School, Austin TX; and **Kevin Chen**, William P. Clements High School, Sugar Land, TX ([Biographies](#))

Relating Missing and Decycling Edges in Directed Graphs



2009 Siemens Competition

