Sketch Recognition Lab researchers honored at IAAI in Toronto
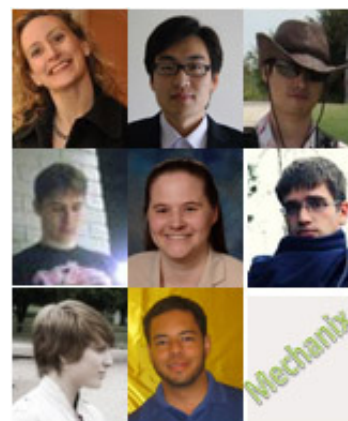
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By: **Kathy Flores**

Researchers in the **Sketch Recognition Lab** in the Department of Computer Science and Engineering at Texas A&M University will be honored at the 24th Conference on Innovative Applications of Artificial Intelligence (IAAI) in Toronto July 22-26.

The researchers received the IAAI Innovation Award for the paper, "Mechanix: A Sketch-Based Tutoring System for Statics Course." The paper was authored by students Stephanie Valentine, Francisco Vides, George Lucchese, David Turner, Hong-hoe Kim and Wenzhe Li, with Associate Professor Tracy Hammond from the Department of Computer Science and Engineering and Assistant Professor Julie Linsey from the Department of Mechanical Engineering. Hammond and Valentine will travel to Toronto to receive the award.

The paper introduces a novel method for teaching introductory engineering courses at large universities, such as Texas A&M and LeTourneau University. In order to ensure maximum classroom effectiveness of their software, the authors of this interdisciplinary work are working very closely with professors from other departments, including Texas A&M faculty Dr. Erin McTigue, associate professor in the College of Education, and Dr. Tony Cahill, professor in the Zachry Department of Civil Engineering; and Dr. Matt Green, an assistant professor in mechanical engineering at LeTourneau University.

Currently, student assessment of concepts is measured by using multiple choice questions, while detailed homework assignments, such as planar truss diagrams, are rarely assigned

because professors and teaching assistants would be too overburdened with grading to return assignments with valuable feedback in a timely manner.

Mechanix allows students to sketch planar truss and free body diagrams on their computers just as they would with pencil and paper, and the Mechanix system checks the student's work against a hand-drawn answer entered by the instructor. The system then returns immediate and detailed feedback to the student. Students can correct any errors in their work and resubmit until the entire content is correct thus reinforcing the critical concepts in the course.

Since Mechanix facilitates the grading and feedback processes, instructors are now able to assign free response questions, and this will give the instructor an accurate understanding of student comprehension. Furthermore, the iterative correction process allows students to learn during a test, rather than simply regurgitating memorized information.

The Innovative Applications of Artificial Intelligence conference promotes research in Artificial Intelligence and also facilitates scientific exchange among AI researchers, practitioners, scientists, and engineers in related disciplines.

Google and The National Science Foundation are generous sponsors of the Mechanix project.

Photo collage —
Left to right, top row: Dr. Hammond, Wenzhe Li, Hong-hoe Kim
Middle row: David Turner, Dr. Linsey, George Lucchese
Bottom row: Stephanie Valentine, Francisco Vides