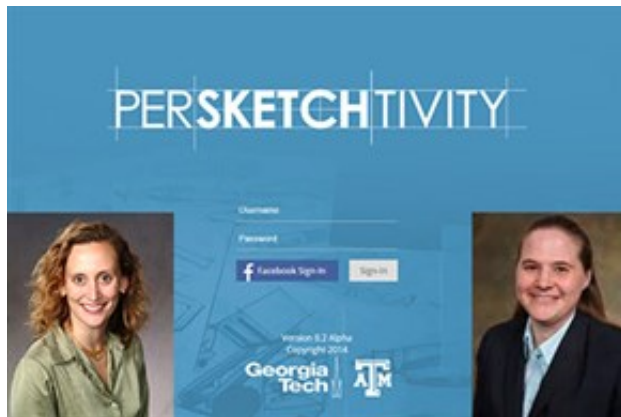


# Hammond receives NSF grant to create software sketching tools

SEPTEMBER 30, 2014

By: Kathy Flores



Dr. Tracy A. Hammond, associate professor in the Department of Computer Science and Engineering at Texas A&M University, received a grant from the NSF Division of Information & Intelligent Systems' Cyberlearning and Future Learning Technologies office to investigate how spatial reasoning and sketching are linked and to develop software sketching tools. Dr.

Erin M. McTigue, assistant professor in the Department of Teaching, Learning, and Culture at Texas A&M is co-principal investigator on the project as is Dr. Jeffrey Liew, associate professor in the Department of Educational Psychology at Texas A&M.

Georgia Institute of Technology has been named as a collaborating institution. Assistant Professor Julie Linsey, Dr. Wendy Newstetter, director of Learning Sciences Research, and Professor of Practice Wayne Li of Georgia Tech make up the six members of the project's investigative team. Texas A&M and Georgia Tech will share the \$550K grant entitled, "**EXP: Collaborative Research: PerSketchTivity - Empowering and Inspiring Creative, Competent, Communicative, and Effective Engineers through Perspective Sketching.**"

Hammond said, "The project proposes two interconnected strands of work: developing the software tool and conducting research studies in the context of undergraduate engineering courses. The software tool will use a heterogeneous set of classifiers to help provide feedback to learners as they perform a sequence of sketching exercises on tablets. The design process will iterate on the tool to explore what types of feedback are most helpful and how different classifiers can be used to detect different levels of sketching skill.

"The program of research will include studying whether sketching training leads to advances in spatial reasoning skills, whether it affects design self-efficacy and attitudes towards sketching, transfer of spatial skillsets to design activities in other courses, and how sketching skills correlate to success on spatial reasoning tasks.

"Research studies will examine whether the tool helps students learn sketching skills, and importantly how it influences their spatial reasoning ability. Thus, if successful this research will not only create tools to allow people to learn to sketch better, but also will advance our understanding of how spatial reasoning and sketching are linked, and could eventually lead to more effective engineering education."

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**Hammond**, who joined Texas A&M University in 2006, is the director of the **Sketch Recognition Lab** in the Department of Computer Science and Engineering. She holds a Ph.D. in computer science and finance technology option from MIT and four degrees from Columbia University: a master's degree in anthropology, a master's degree in computer science, a bachelor's degree in mathematics, and a bachelor's degree in applied mathematics. Hammond's research focuses on human perception, sketch recognition, computer human interaction, and learning.

**McTigue** also joined Texas A&M in 2006 and directs the A&M Reading Clinic. Her interests are in the challenges of reading informational texts (specifically science) and in students' motivation for reading.

**Liew** is the founder and director of Project ABC and Project CASL at Texas A&M. His research addresses issues such as school readiness, achievement gaps, mental health disparities, and childhood obesity.

**Linsey's** research focus is on creating better tools to enhance innovation and conceptual design.

**Newstetter** works with faculty at Georgia Tech and other institutions through Project Kaleidoscope to develop functional science, math and engineering learning spaces based on cognitive science research.

**Li** teaches visual communication and digital media techniques. He received a master's degree in engineering from Stanford and undergraduate degrees in fine arts in design and mechanical engineering from the University of Texas at Austin before joining the corporate

world.