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SIUE/SLU research project aims to make people more socially connected through teleoperated robots

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EDWARDSVILLE - Southern Illinois University Edwardsville and Saint Louis University innovators are forging new territory in the function of telerobotic platforms

by creating gesture capabilities that propel them from passive, limited interfaces to social, tangible human-robot interactionists.

Through a $471,000 grant from the National Science Foundation, the innovative research is being conducted by principal investigators Jerry Weinberg, PhD, associate provost for research and dean of the SIUE Graduate School, and Jenna Gorlewicz, PhD, assistant professor of mechanical engineering at Saint Louis University. Mitsuru Shimizu, assistant professor of psychology at SIUE, is co-principal investigator.

“Research has shown that while telepresence platforms are enabling new heights of remote communication, there still exists challenges for users in creating the social dynamic of connectedness that is intrinsically present in physical face-to-face interactions,” said Weinberg.

“The goal of our project is to transcend that passiveness by creating a mobile telepresence robot with a lightweight, ergonomic arm to explore the haptic functionalities needed to provide socially informative and acceptable interactions among local and remote users.”

The development of the human-like manipulative arm will enable the telerobotic platform to achieve social behaviors such as shaking hands, fist bumping, conducting expressive gestures and pointing.

“If you think about how we, as humans, communicate, we tend to talk with our hands to express ourselves and engage one another,” explained Gorlewicz. “Currently, however, telerobotic platforms do not have these capabilities, making interactions feel superficial between those using them to communicate.

“As a result, telepresence robots often get coined as “Skype on wheels.” We hope to change this by enhancing connectedness and bringing tangible interactions to those using telepresence robots for work or personal use, thereby increasing their effectiveness in communication.”

The principal investigators are highly committed to the University’s teacher-scholar model. As such, the project will offer unique learning experiences for both undergraduates and graduate students.

“Undergraduates will be exposed to robotics, teleoperation and haptics through research experiences and specific teaching examples we will leverage in the classroom,” Weinberg explained. “Graduate education will be enhanced through direct student training and mentoring, and through the development of a graduate level haptics and teleoperation course.”

The research team will also collaborate with the SIUE STEM Center and the Saint Louis Science Center to educate K-12 students on this innovative technology through outreach events.

By preparing the next generation of leaders in a knowledge-based economy,SIUE's Graduate School fulfills the region's demand for highly trained professionals. Graduate school offerings include arts and sciences, business, education, engineering, nursing and interdisciplinary opportunities. SIUE professors provide students with a unique integration of theoretical education and hands-on research experiences. Students can obtain graduate certificates or pursue master's degrees, and be part of a supportive learning and rich intellectual environment that is tailored to the needs of adult learners. The Graduate School raises the visibility of research at SIUE, which ranks highest among its Illinois Board of Higher Education peers in total research and development expenditures according to the National Science Foundation. Doctoral programs are available in the Schools of Education (Ed.D.) and Nursing (DNP). The School of Engineering and the Department of Historical Studies feature cooperative doctoral programs (Ph.D.).