NRI: FND: Customizable Haptic Co-Robots For Training Emergency Surgical Procedures

Ann Majewicz Fey [1,2] and Caroline Park [2]

[1] University of Texas at Austin, [2] University of Texas Southwestern

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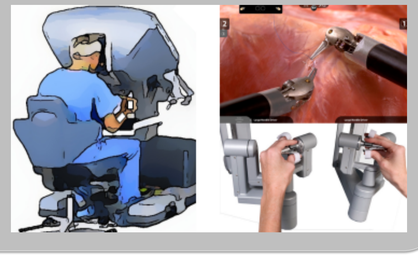
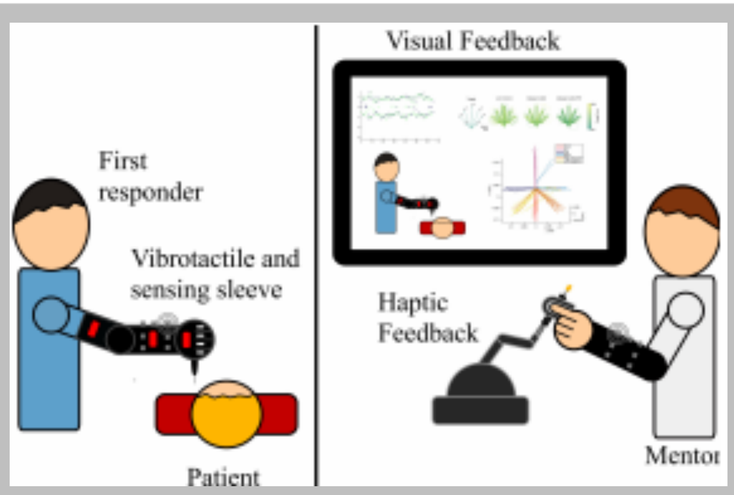
Challenge: surgical training traditionally requires extensive practice on patients under expert supervision. Simulators for use outside of operating rooms exist, but are limited in the fact that the expert can only evaluate performance through vision.



Scientific Impact: development of a haptic technology framework for medical training and telementoring, leading to a better understanding of human-robot interaction, new methods for sensing kinetic and kinematic interactions with a patient environment and exploration of the impact of haptic feedback on enhancing trainee viability in emergency scenarios.

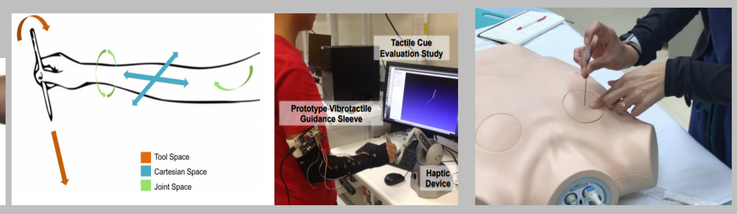
Solution: development of a customizable haptic co-robot capable of coaching an individual to achieve expert-like performance in complex and emergency medical tasks.



Aim I: trainee kinematic and kinetic sensing to provide meaningful feedback to the expert mentor.

Aim II: design and optimize haptic feedback guidance cues.

Aim III: assess the effectiveness through human-user studies



Broader impact: increase in customizability and availability of training systems, impact on general topics such as patient safety, natural human-robot interaction and robot-mediated human-to-human communication

Team-Based Biomedical Innovation Elective Courses: ran by UTSW students in the last 11 years, will be supported in a more stable manner by this project.

Over 1000 medical students, residents and other health professionals at UTSW will benefit.

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