SEE-WHAT-I-DO: INCREASING MENTOR AND TRAINEE SENSE OF CO-PRESENCE IN TRAUMA SURGERIES WITH THE STAR PLATFORM

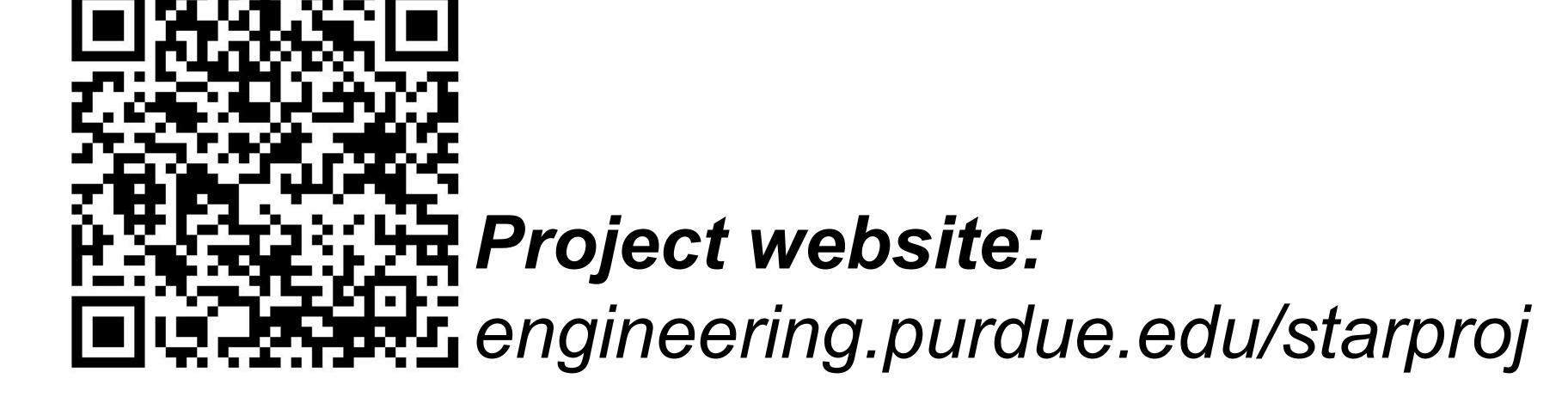
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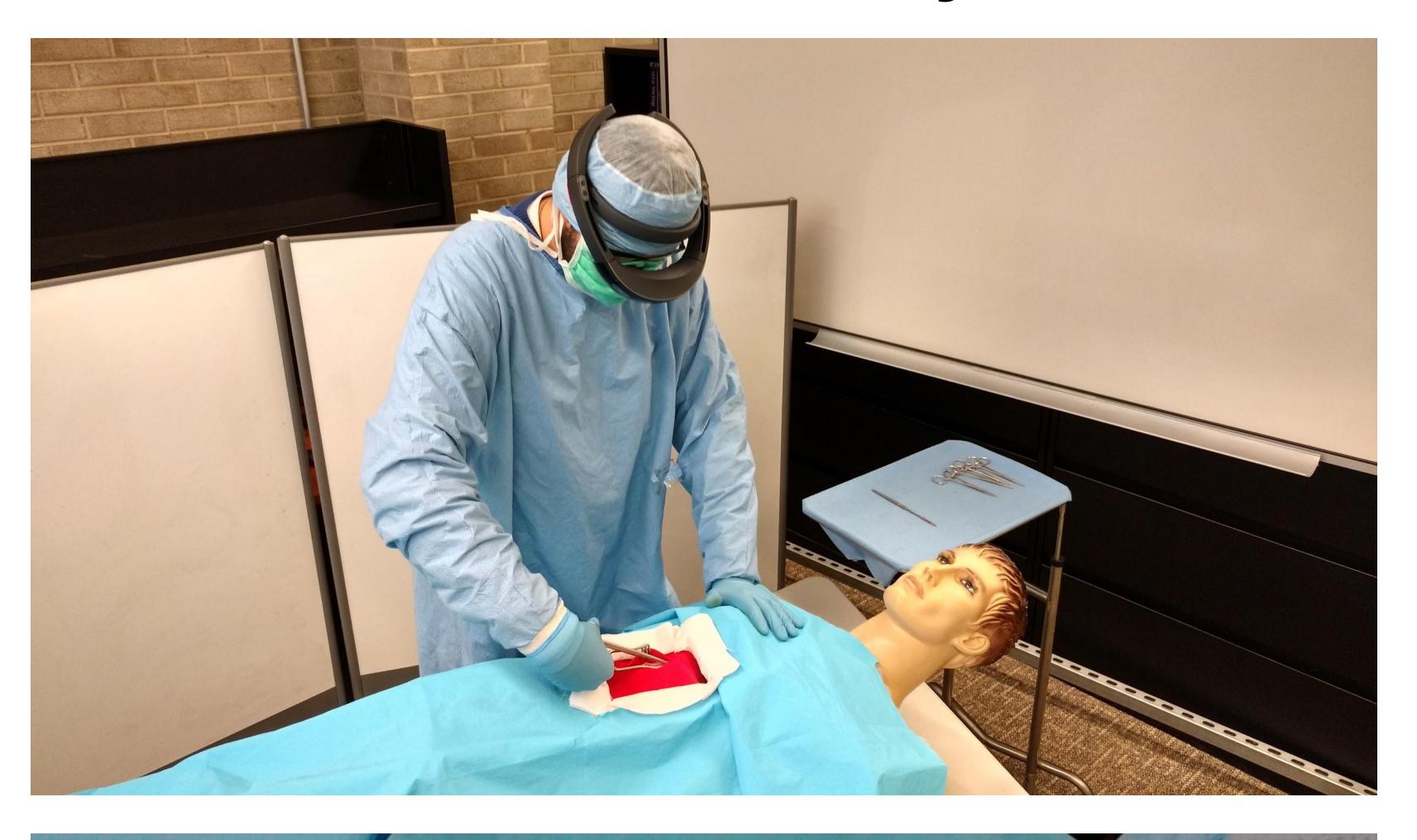
Motivation & Approach

Surgical telementoring provides surgical expertise remotely, which enables immediate specialized surgical assistance in forward operating bases, and which facilitates surgical training and simulation. Conventional systems display the mentor's annotations of the operating field on a nearby monitor, which can lead to focus shifts, to surgery errors, and to an inefficient acquisition of surgical skills.

We are developing an augmented reality (AR) surgical telementoring system that allows a remote expert surgeon to overlay virtual annotations directly onto the trainee surgeon's view of the operating field.



AR HMD Trainee System



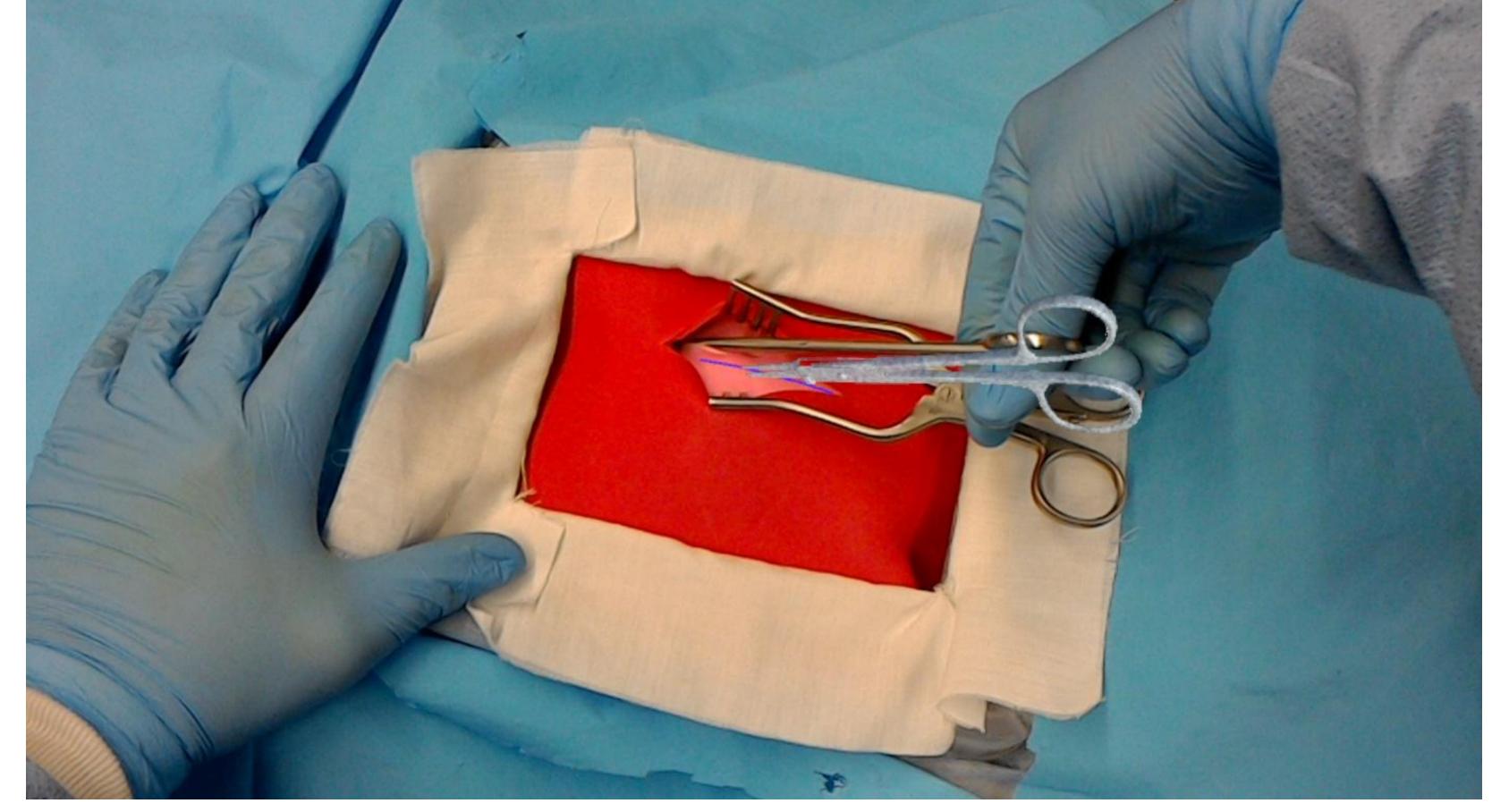


Figure 1. Trainee surgeon using an augmented reality head mounted display (top), and trainee's view of the operating field (bottom). A remote mentor suggests surgical instrument placement through virtual annotations of the operating field.

Mentor System Interaction Table

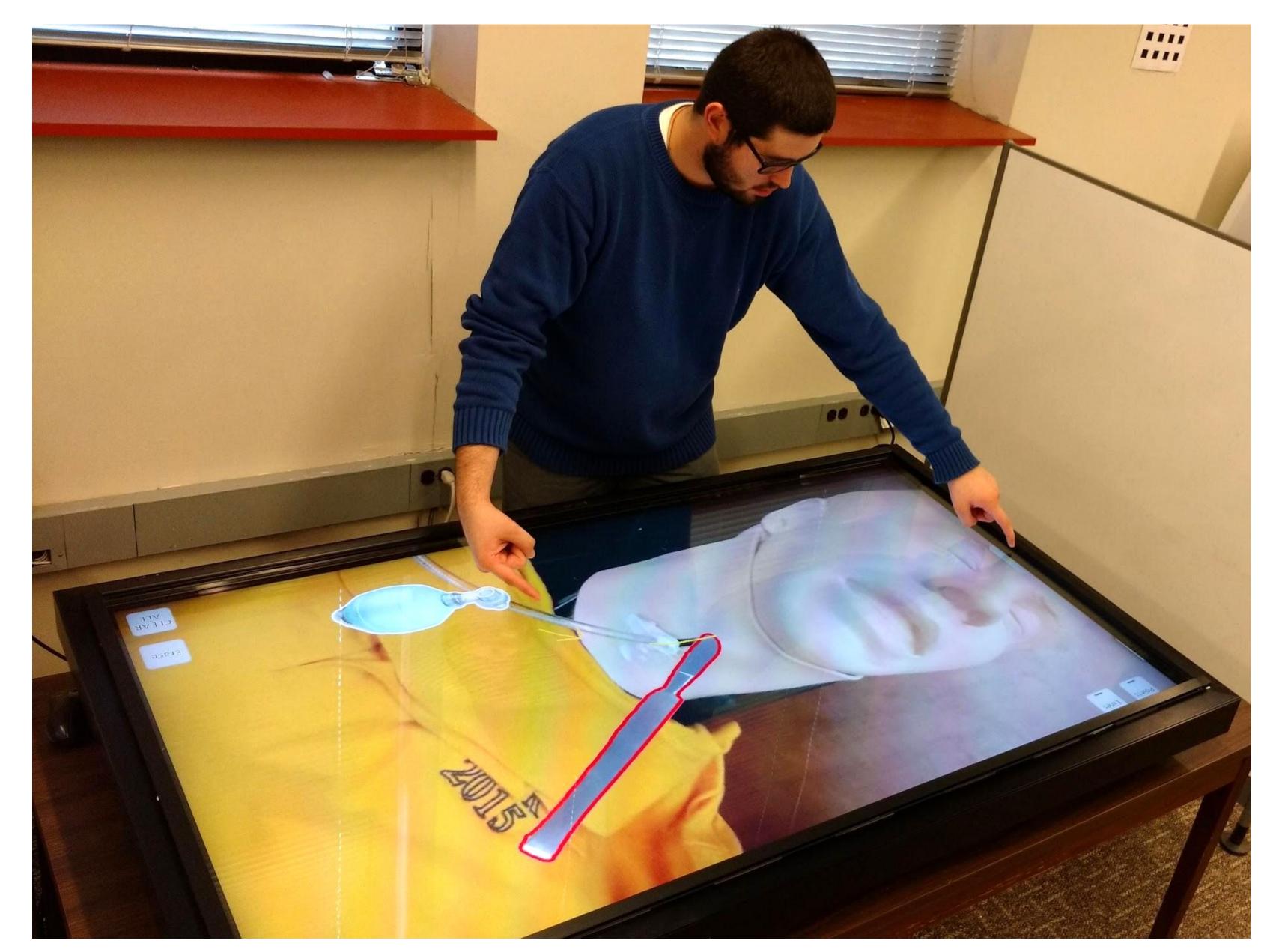


Figure 2. Mentor surgeon using a large size interaction table. The mentor annotates the surgical field through a touch-based and touch-free gesture user interface, and the annotations are sent to the trainee system for display.

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Transparent Display Trainee System





Figure 3. Trainee surgeon using an augmented reality transparent display (top), and trainee's view (bottom). The display overlays a visualization of a future step of a cricothyroidotomy procedure onto the simulator.