



EndovascularAR: Utility of Mixed Reality to Segment Large Displays in Surgical Settings

Motivation



Figure 1: Angiography Monitor

- ❖ Endovascular surgeries require surgeons to consult **many** different information streams **at once** from a single monitor
- ❖ Shortcomings: split-attention due to **fixed form** factor and **limited interaction** due to sterility constraints
- ❖ Proposed solution: **segment** the large monitor as **holographic windows**

Works in Progress

LEGO Study

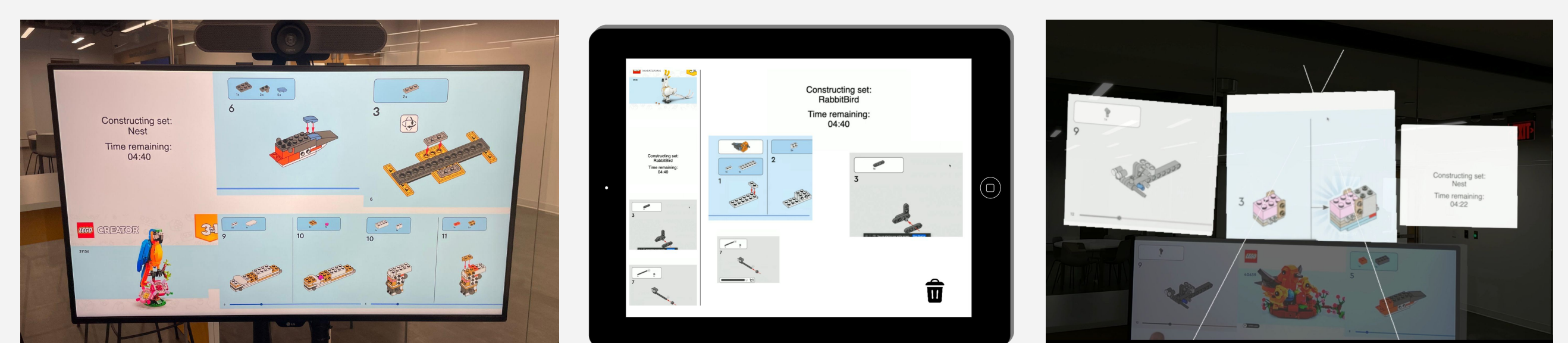


Figure 2: LEGO Study System display modalities

- ❖ 3 modalities: Large display, tablet, mixed reality
- ❖ High cognitive load lego building task
- ❖ Task performance, NASA-TLX, and SART
- ❖ Semi-structured interviews
 - Preferences

Surgical Ergonomics Study

- ❖ Replay surgery
- ❖ Surgeons watch the video of the large monitor captured during surgery with the ability to segment and spatially position the segments around a simulated surgical field
- ❖ Semi-structured interviews:
 - General experience
 - Workflow impact

Design Challenges

- ❖ **Hands-Free Interaction:** Physician hands are occupied and sterile
- ❖ **Virtual Monitor Occlusion:** OR is heavily occupied, occlusion of virtual windows may be common

Conclusion

- Mixed reality may provide better information management in the OR
- Understanding user behavior using the technology will inform design decisions and may improve patient outcomes