Virtual Reality Guided Skull-base Surgery

- Mastoidectomy is a highly precise surgery
- Image-guidance can provide “context situation awareness” for enhanced safety

![Actural surgical state](image1.png) ![Simulated surgical state](image2.png)

Video credit:
[1] https://www.youtube.com/watch?v=jnonLwxW2Cg

What Students Will Do:
- Perform (and maintain) registration
- Set up real-time communication between VR and robot
- Conduct user study to evaluate system effectiveness
- Provide some form of real-time tool-tissue sensing (for 3-person project)

Deliverables:
- Minimum: Working software and documentation for registration and VR-robot communication
- Expected: Internal user study trial
- Maximum: Conference paper

Size group: 2-3
Skills: C++, Computer Integrated Surgery
Mentors: Max Li (zli122@jhu.edu), Adnan Munawar (amunawa2@jh.edu), Dr. Francis Creighton, Prof. Mathias Unberath, Prof. Russ Taylor