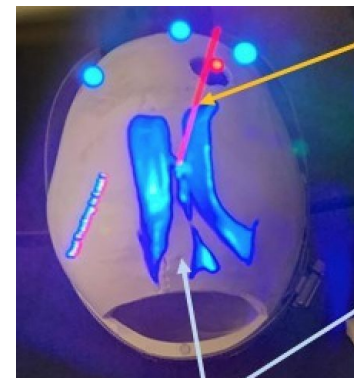
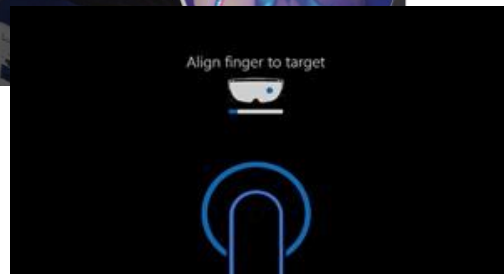
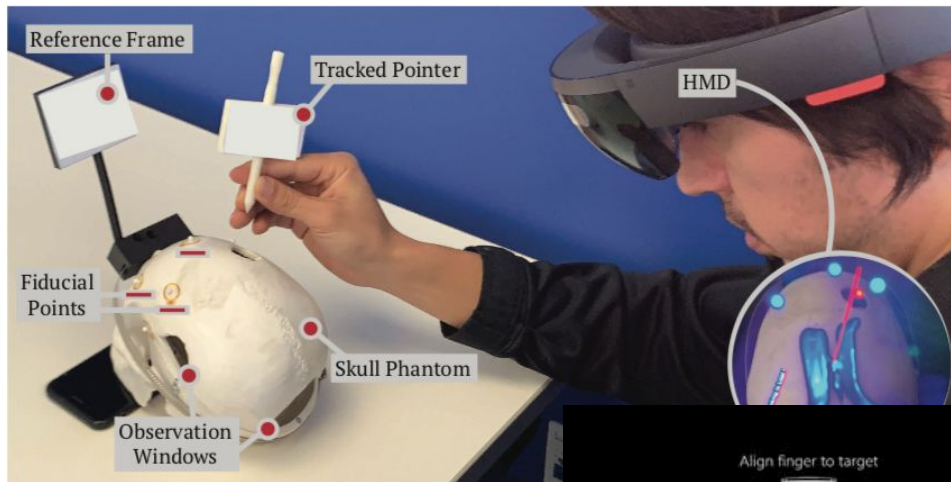


HMD-Based Navigation for Ventriculostomy Mini-Checkpoint Presentation

Maia Stiber

Mentors: Ehsan Azimi, Peter Kazanzides, Chien-Ming Huang, Dr. Judy Huang, and Dr. Camilo Molina

Overview of Project






<https://docs.microsoft.com/en-us/hololens/hololens-calibration>

Deliverables

Minimum:	<ul style="list-style-type: none">● User Study Results written as part of a submitted MICCAI 2020 paper
Expected:	<ul style="list-style-type: none">● Video Analysis Results ✓
Maximum	<ul style="list-style-type: none">● Script to improve aid in depth perception ✓<ul style="list-style-type: none">○ Adaptive prompts based on wearer's behavior○ Improved visualizations

Overall Schedule

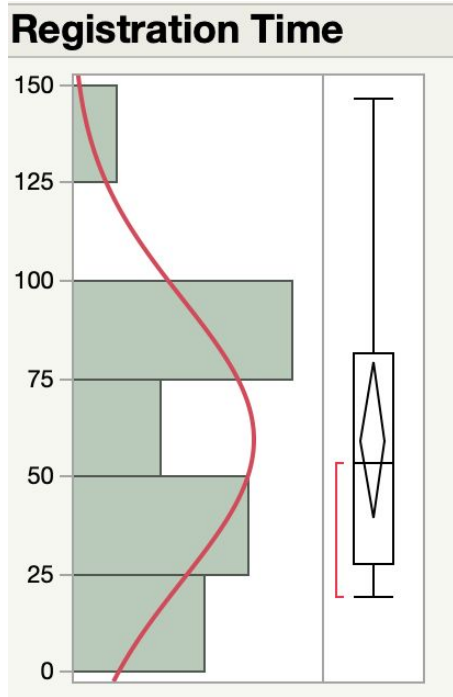
	February				March			April				May	
User Study and Prep	Completed	Completed	Completed	Completed	Completed	Completed							
Data Analysis						Completed	Completed						
Reading Preliminary Papers	Completed	Completed	Completed	Completed	Completed	Completed							
Video Analysis							Completed	Completed	Completed				
Create Script to prompt wearers based on behavior								In Progress	In Progress	In Progress	In Progress		
Create Report												In Progress	

-  Completed
-  Scheduled
-  In Progress

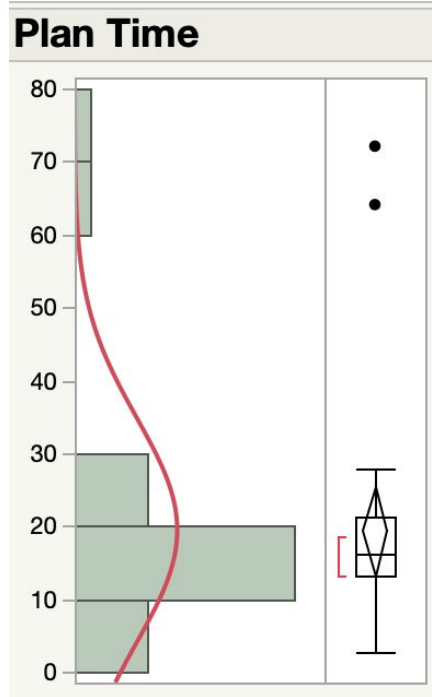
Milestones

Milestone	Expected Date Done By	Status
User Study Conducted	3/13/20	Completed
• Questionnaire Created	2/21/20	Completed
• Video Tutorial Created	2/19/20	Completed
• IRB Approval	2/17/20	Completed
• Neurosurgeon Approval of User Study Questionnaire and Tutorial	2/24/20	Completed
• Pilot Study Conducted	2/29/20	Completed
• Actual User Study Conducted	3/13/20	Completed
Data Analysis of the User Study	3/20/20	Completed
• Accuracy	3/20/20	Completed
• SUS/NASA TLX scales analyzed	3/20/20	Completed
Reading Preliminary Papers	3/17/20	Completed
Video Analysis	4/15/20	Completed
• Video Coding	4/10/20	Completed
• Statistical Analysis of the coded video	4/15/20	Completed
Improved Visualization and Prompt Script for AR-Guided Ventriculostomy	4/30/20	In Progress
• Edited of guide line to improve depth perception	4/22/20	In Progress
• Determination of whether the user has moved his head	4/22/20	In Progress
• Create script that provides prompt when user hasn't moved head	4/30/20	In Progress
Report	5/5/20	In Progress

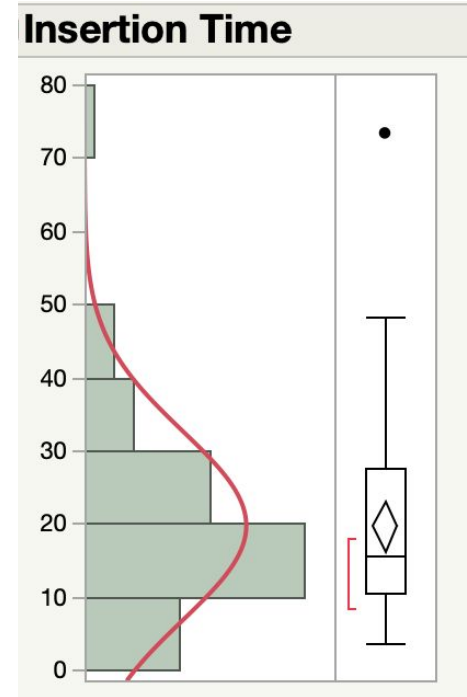
Overall Stats



M = 59.1, SD = 36.04

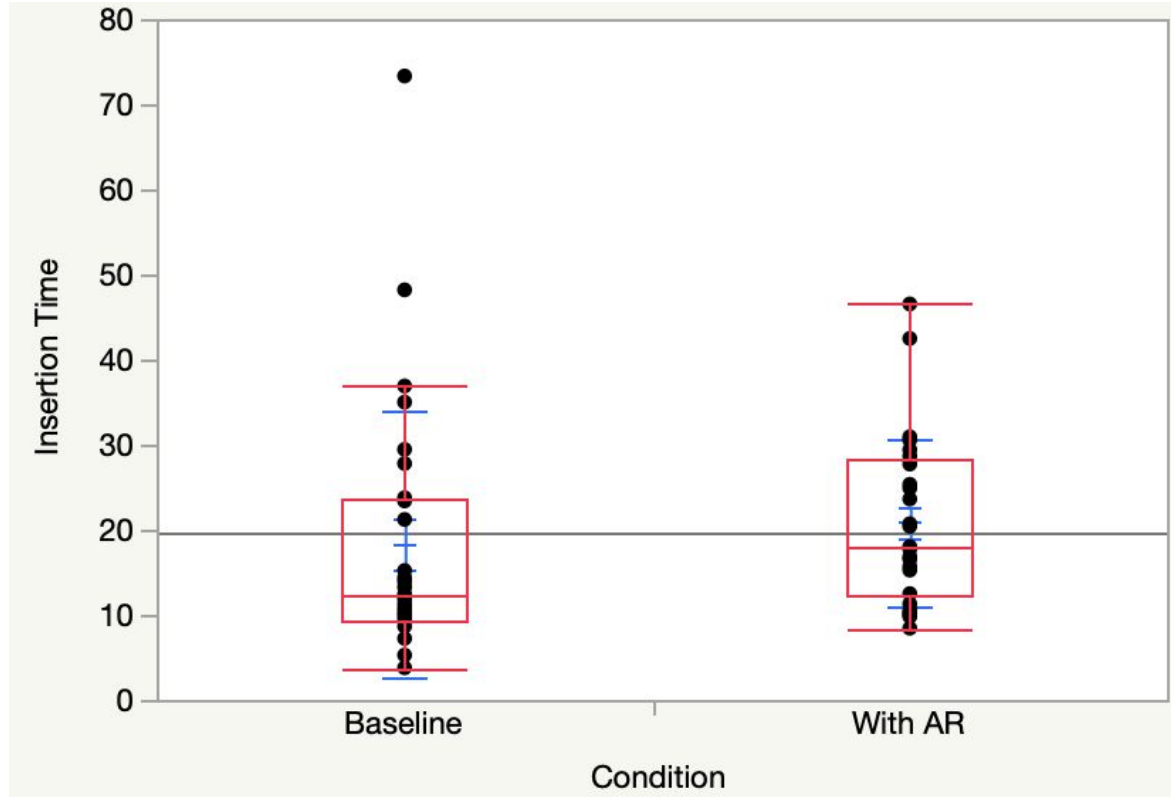


M = 19.44, SD = 15.35



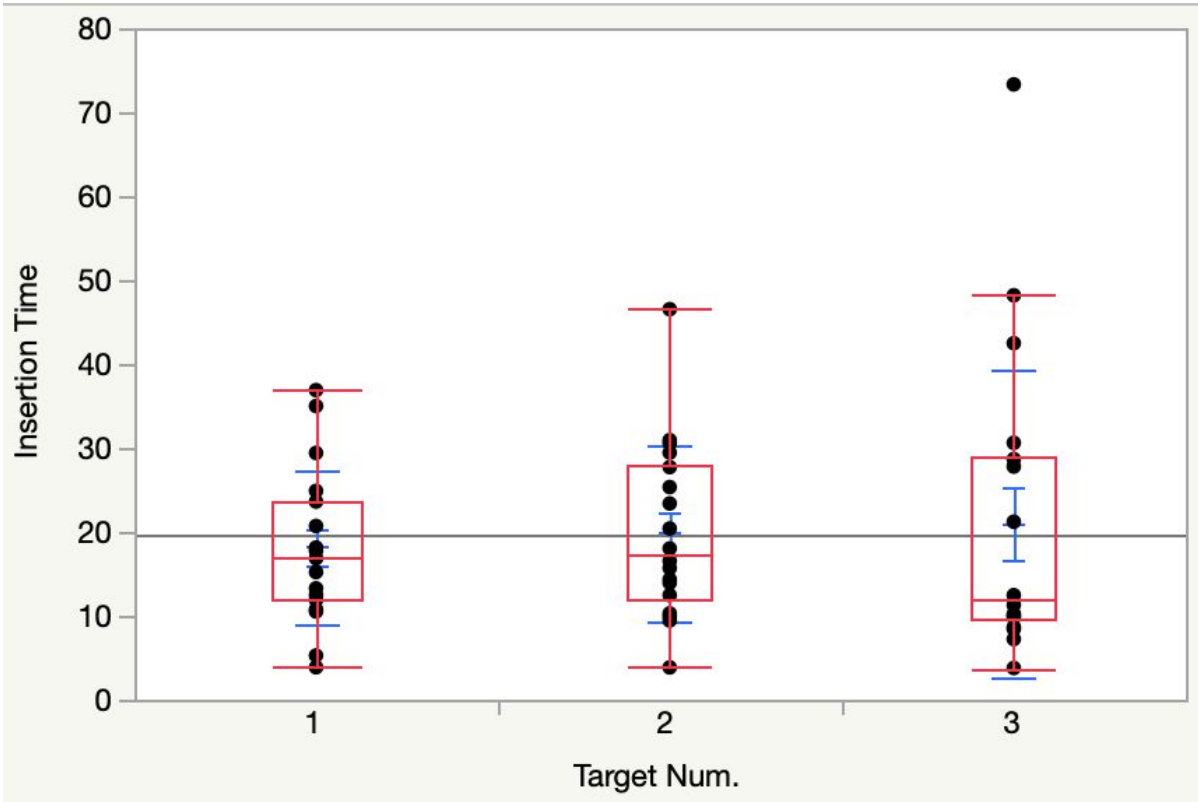
M = 19.67, SD = 12.93

Insertion Time Per Condition



- Baseline:
 - $M = 18.4$, $SD = 15.6$
- With AR
 - $M = 20.9$, $SD = 9.82$
- Noticeable difference
 - $p = 0.039$

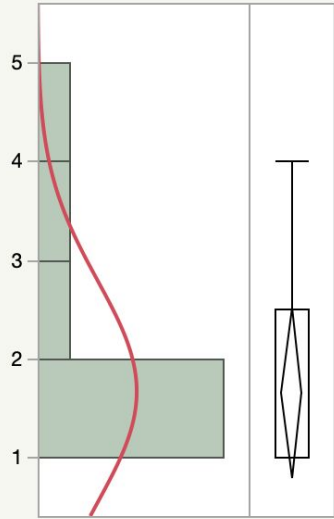
Insertion Time per Target



- Target 1
 - $M = 18.17$, $SD = 9.04$
- Target 2
 - $M = 19.92$, $SD = 10.44$
- Target 3
 - $M = 20.99$, $SD = 18.19$

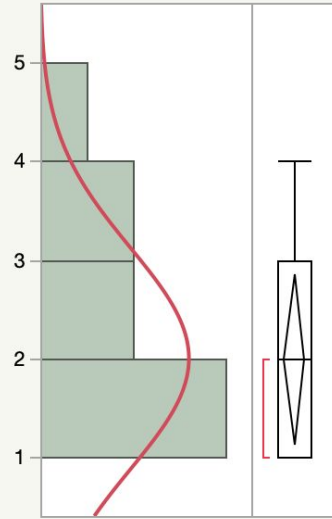
Overall Stats - Frequency of Registrations

▼ Freq. Register



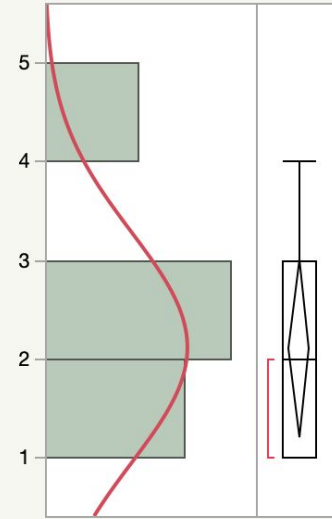
M = 1.67, SD = 1.12

▼ Freq r1



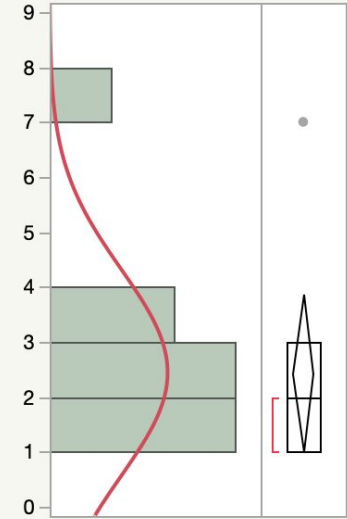
M = 2, SD = 1.11

▼ Freq r2



M = 2.11, SD = 1.17

▼ Freq r3



M = 2.44, SD = 1.88

Questions?