Mixed Reality Platform

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NREIP
NAVAL RESEARCH ENTERPRISE
INTERNSHIP PROGRAM

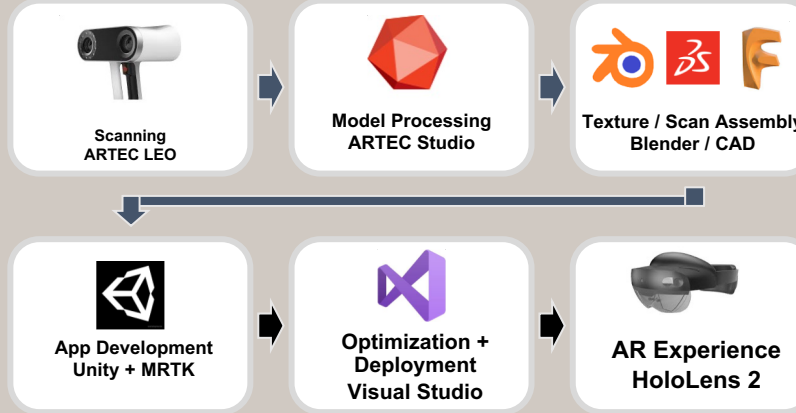## Project Objective and Intern Contribution:

Our aim was… To rapidly research, develop, and test an Augmented Reality proof of concept for the U.S Navy. This required familiarization with 3D scanning technology using the ARTEC Leo 3D LiDAR Scanner. Scans were rendered in Artec Studio (a post processing software), exported for animating and adding of simulation features to Unity, and once completed, this program was deployed onto a Microsoft HoloLens 2 Augmented Reality headset.

We were assigned to…. 3D Scan a Vertical Bandsaw and create an Augmented Reality (AR) application that acts as an interactive tutorial for a maintenance procedure on the said device. This application will act as a proof of concept demonstrating the potential for AR technologies to be used as a less costly and more effective training tool for Navy Technicians and personnel in the near future.

Our contributions were…. We documented the steps that went into producing our platform, allowing us to produce a procedure which enables future personnel to quickly familiarize themselves with and participate in; the process that streamlines mixed reality application development for use.

The methods we used to accomplish this aim were… Research, hardware testing, and software troubleshooting.

App development for HoloLens 2 using 3D Scanning

Scanning
ARTEC LEO → Model Processing
ARTEC Studio → Texture / Scan Assembly
Blender / CAD

App Development
Unity + MRTK → Optimization +
Deployment
Visual Studio → AR Experience
HoloLens 2

What are you most proud of this summer?
- Developed an Augmented-Reality program using Unity and 3D Scanning technology
- Demonstrated the capability of AR technology for the U.S Navy of the future

Why was the internship valuable?
- Hands-on experience in a cutting edge Navy Laboratory
- Learned about real-world applications of Engineering and Navy technologies
- Networked with NAVSEA Engineers and professionals

Advice for future cohorts?
- Do not hesitate to ask questions!
- Ask to work on projects that interest you
- Make connections with Navy personnel and other interns
- Take initiative to solve problems

Results:
- Created a demo application showcasing AR capabilities for Navy use for the Microsoft HoloLens 2
- Documented an easy to follow procedure for 3D Scanning -> App Development -> Hololens Application

Accomplishments:
- Successful import of a 3D Scanned object to Unity and subsequent addition of interactive features to the model

Next Steps:
- Focus on App Development
  - Increased Fidelity (level of realism) for AR Training
  - AI integration (automatic object recognition)