Alpha Presentation
Augmented Reality Mechanic Training

The Capstone Experience
Team Union Pacific

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Project Overview

• Two immersive training experiences for mechanics
• *Learn About Machinery (HoloLens + PC)*
  - View labeled holograms of CAD models
  - Select parts to display information
  - Import CAD models through PC application
• *Build a Train (Android)*
  - Guides user through assembling a 3D printed train
  - Uses object recognition to locate train cars
System Architecture

The Capstone Experience

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System Architecture

User -> Camera Feed

AR Phone Application

Give feed to Unity

Transfer image data

Unity

Move tracking data

Vuforia Scanning Application

View Train

Train Part

View Train

Tracking points to database

Vuforia Database

Tracking points
Learn About Machinery – Bounding Box
Learn About Machinery - Tooltip

Solenoid Valve

This valve uses the magnetic field from an electric current to control the flow of fluids through the system.
First Step of Build a Train

Connect the engine to the passenger

Engine

Passenger
Second Step of Build a Train

Connect the passenger to the caboose
Completion of Build a Train

Successfully built!
What’s left to do?

• **Learn About Machinery**
  - HoloLens UI/UX improvements
  - Finish desktop UI
  - File transfer from desktop to HoloLens

• **Build a Train**
  - Indication of user errors
  - UI/UX improvements
  - Enhance detection abilities
Questions?