MICHIGAN STATE UNIVERSITY

Beta Presentation

Trailering Safety Using Computer Vision

The Capstone Experience

Team Bosch

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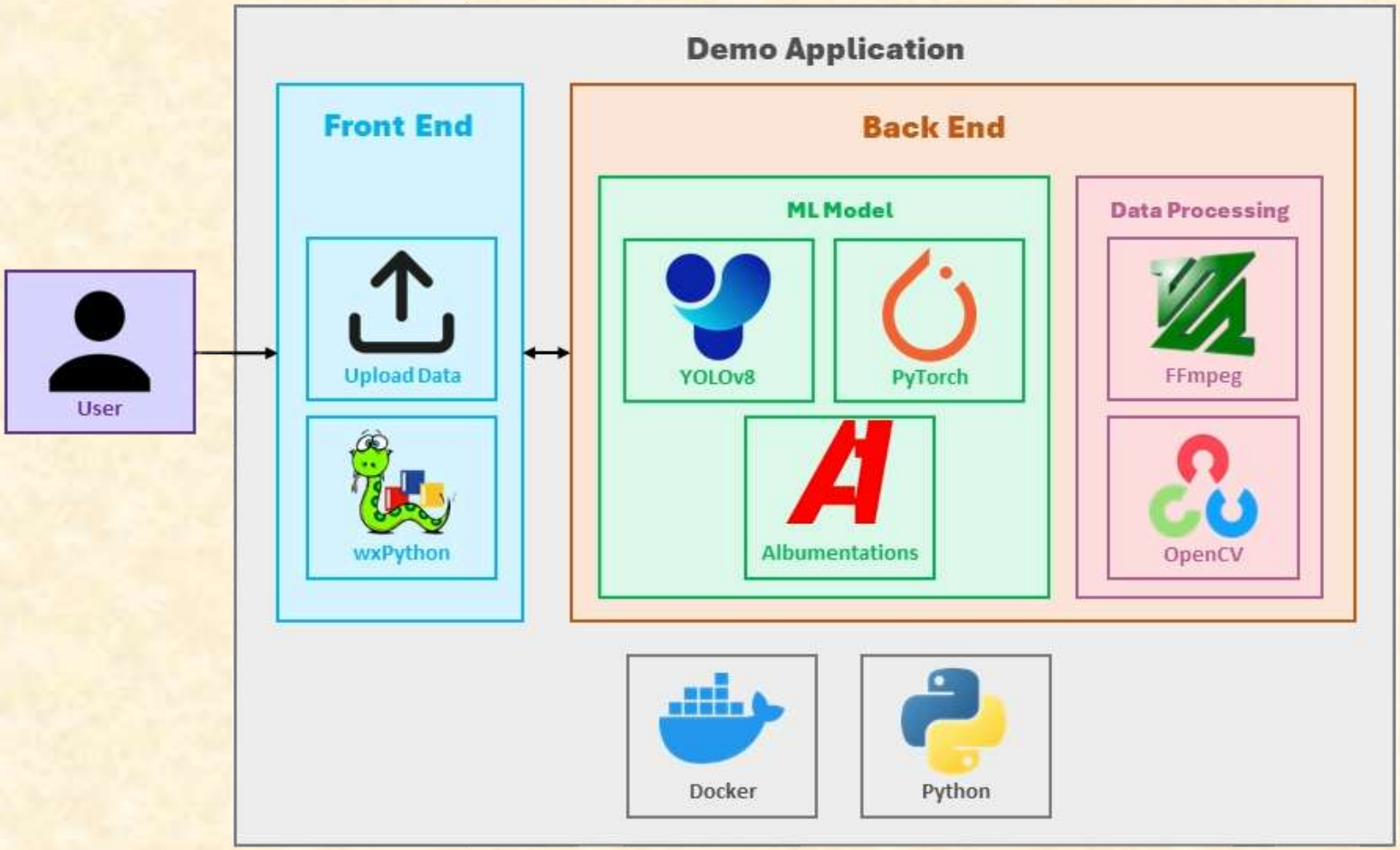
From Students…
…to Professionals

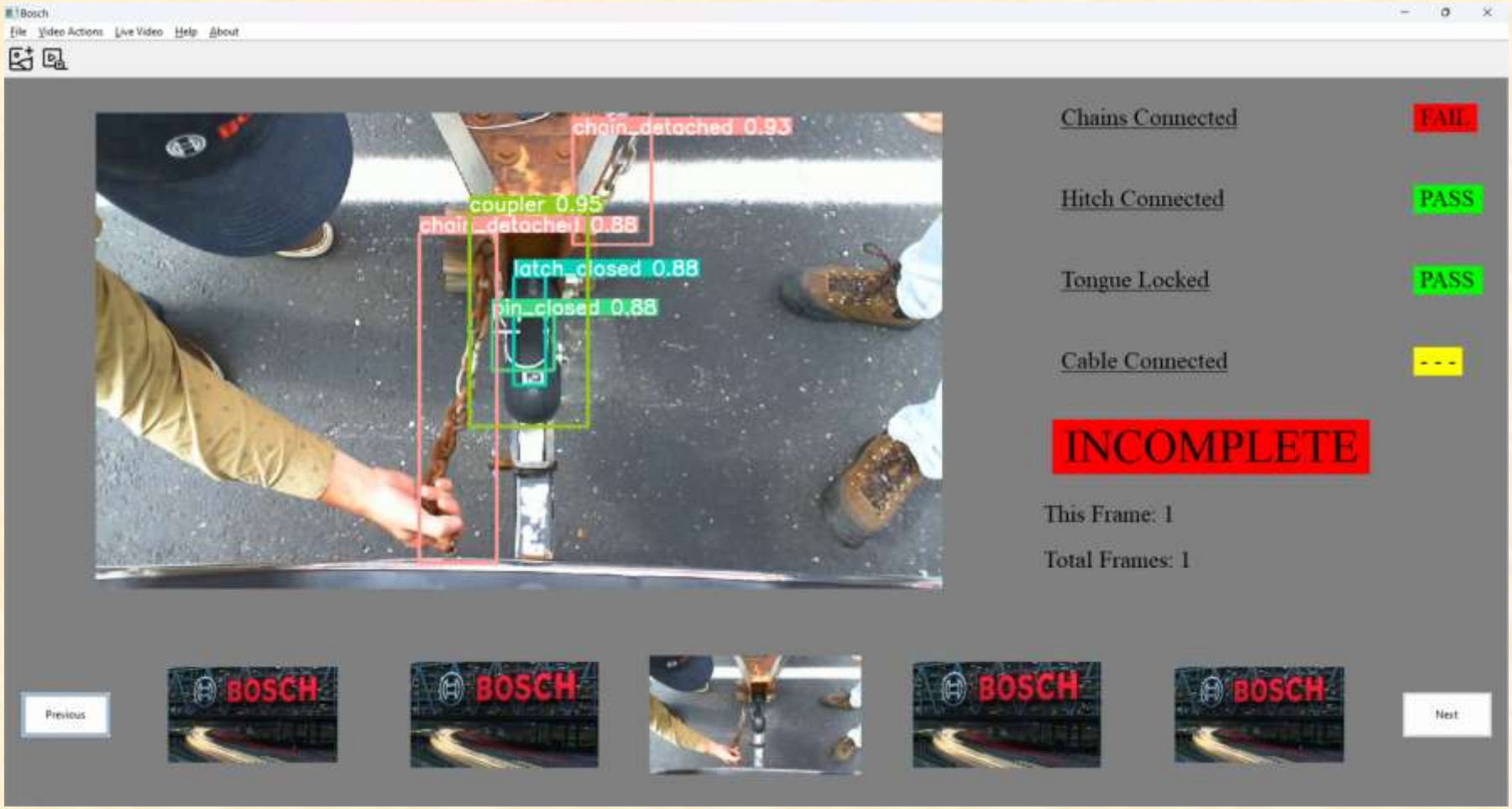
Project Overview

- Bosch: leading and worldwide German supplier in automotive equipment and services.
- Ensures vehicle has properly hitched trailer.
- Prevents:
  - Injuries
  - Vehicle Accidents
  - Vehicle Damages
- Analyzes image or video for component identification.
- Assigns pass/fail score based on checklist.

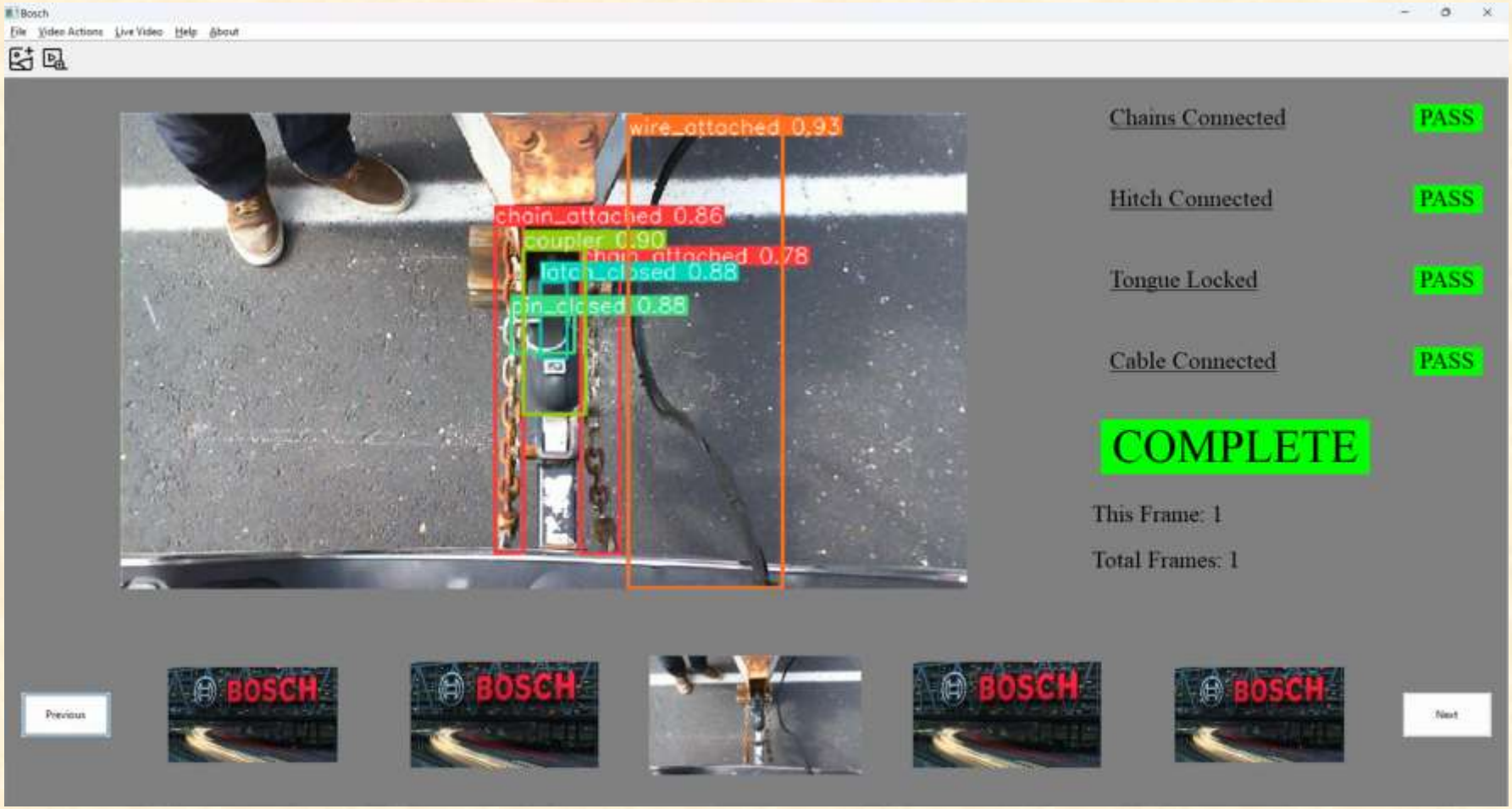
System Architecture



Incomplete Hitch

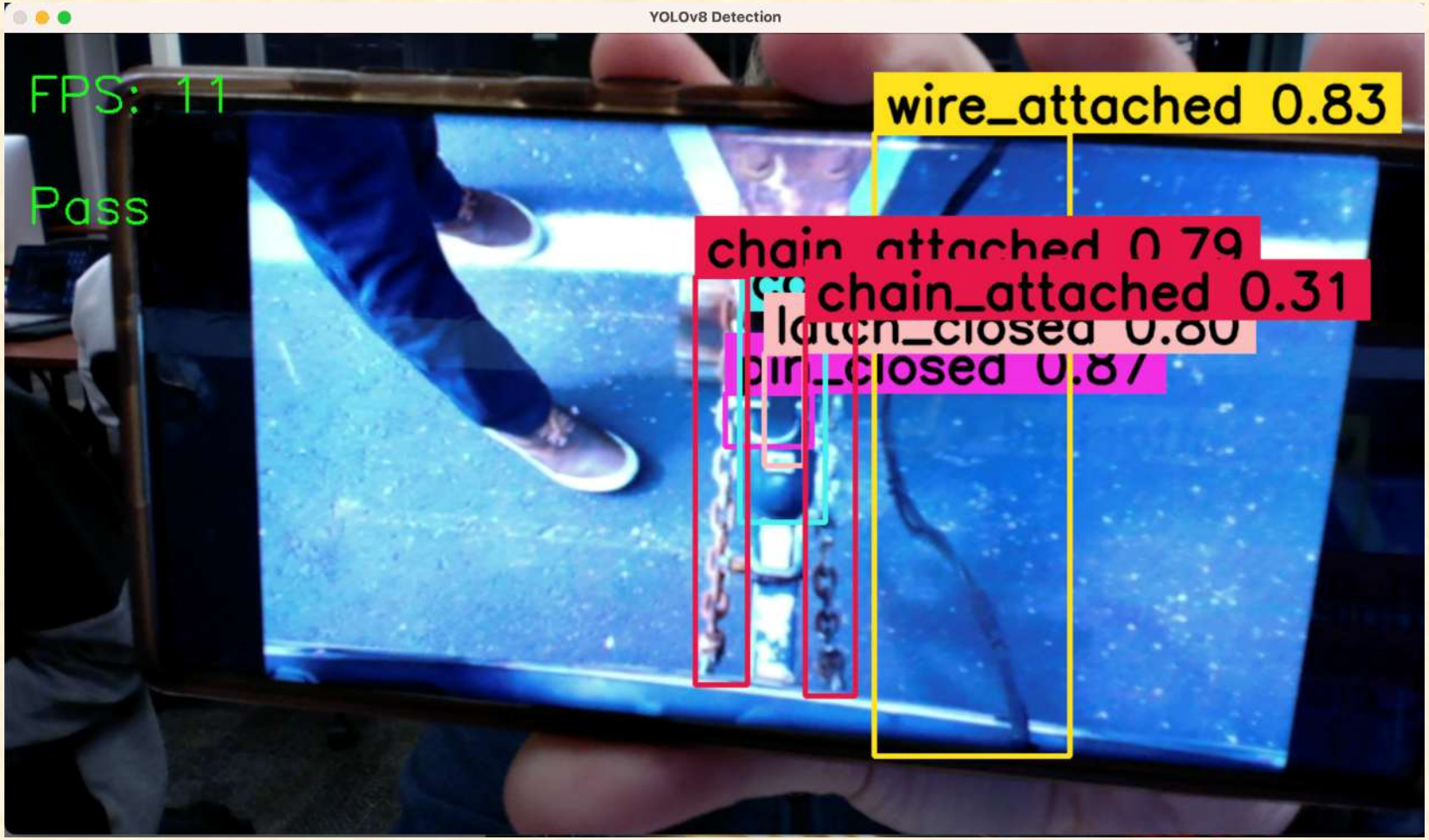


Complete Hitch

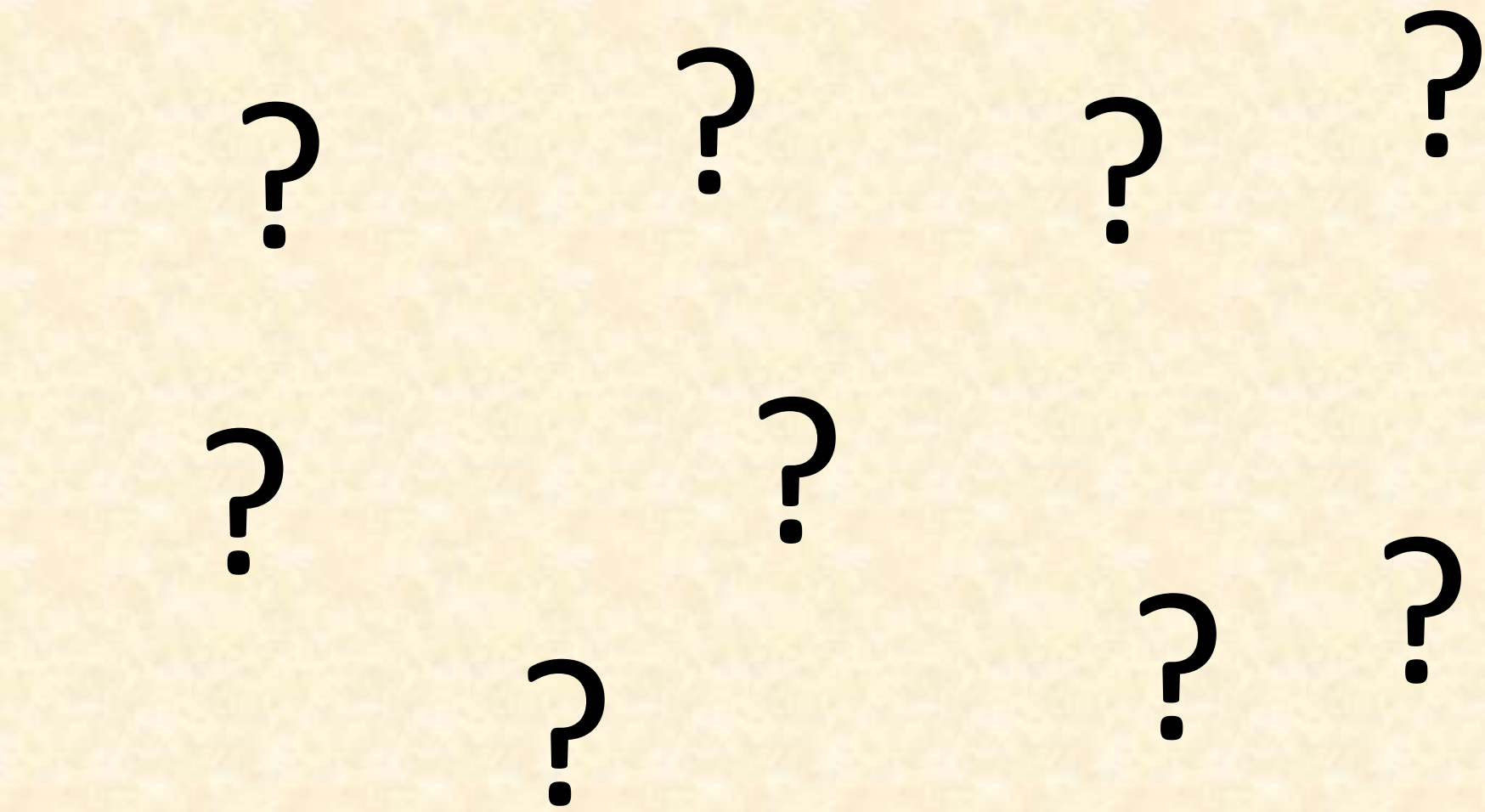


Augmented Incomplete Hitch

Live Video


YOLOv8 Detection
FPS: 11
Pass
wire_attached 0.83
chain_attached 0.31

What's left to do?

- Stretch Goals
  - Live Video Analysis
  - Kubernetes/Scalability
  - Video Download
  - Metrics Plot Display
  - Progress Bars in UI
- Other Tasks
  - Model Tuning:
    - Adjust Confidence Values
    - Cross-Validation Training
  - UI Light Cleanup

Questions?