

MICHIGAN STATE

UNIVERSITY

Alpha Presentation

Trailer Safety Using Computer Vision

The Capstone Experience

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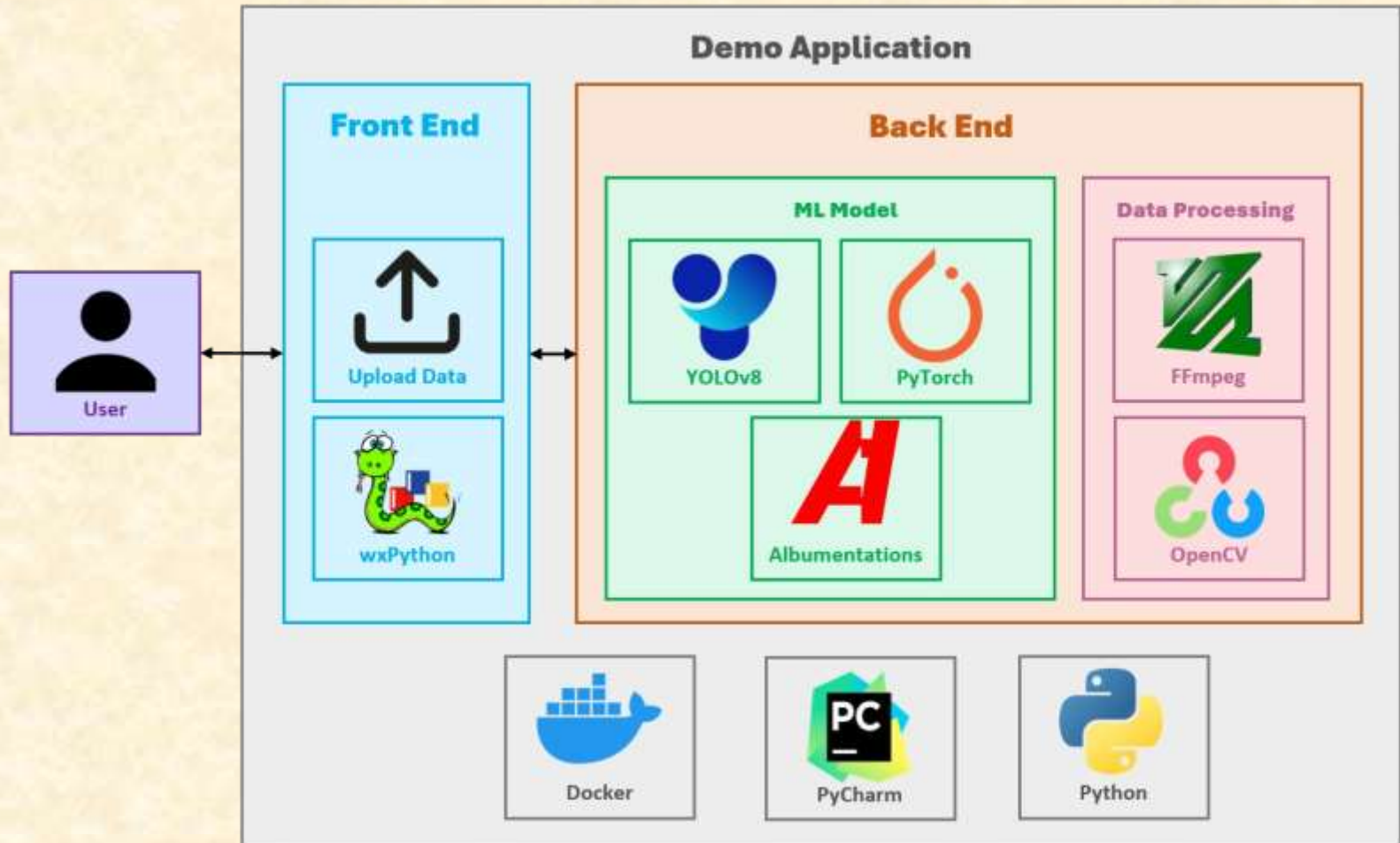
*From Students...
...to Professionals*

Project Overview

- Ensures trailer-hitch connection is secure.
- Prevents:
 - Injuries
 - Vehicle Accidents
 - Vehicle Damages
- Analyzes image or video for component identification.
- Returns pass/fail score based on checklist.



System Architecture



Incomplete Hitch

chain_attached 0.94

chain_detached 0.93

coupler 0.85

latch_closed 0.82

pin_closed 0.92

Chains Connected	FAIL
Hitch Connected	PASS
Tongue Locked	PASS
Cable Connected	FAIL

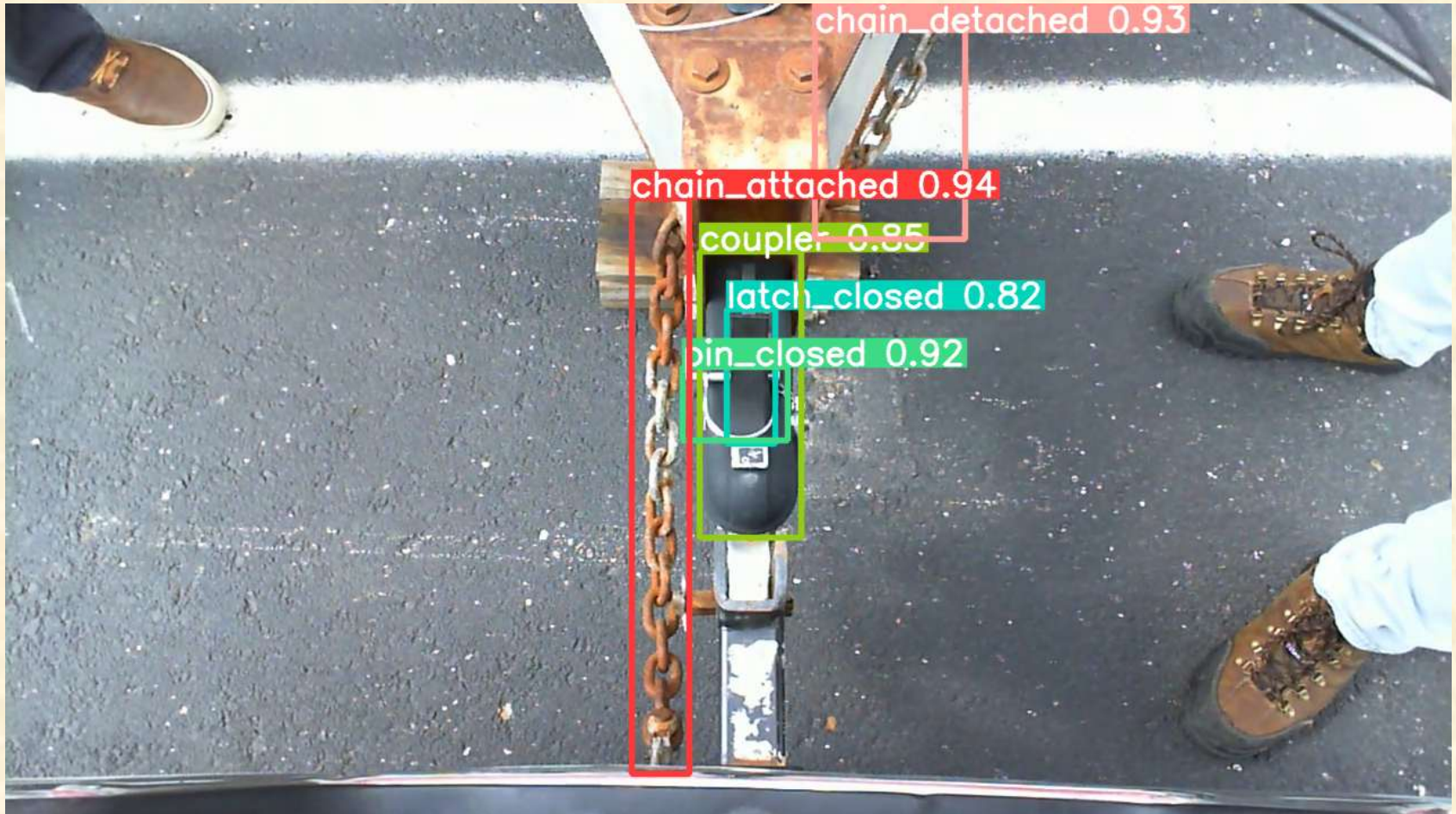
INCOMPLETE

Previous

Next



Close-Up: Incomplete Hitch



Complete Hitch

Chains Connected **FAIL**

Hitch Connected **PASS**

Tongue Locked **PASS**

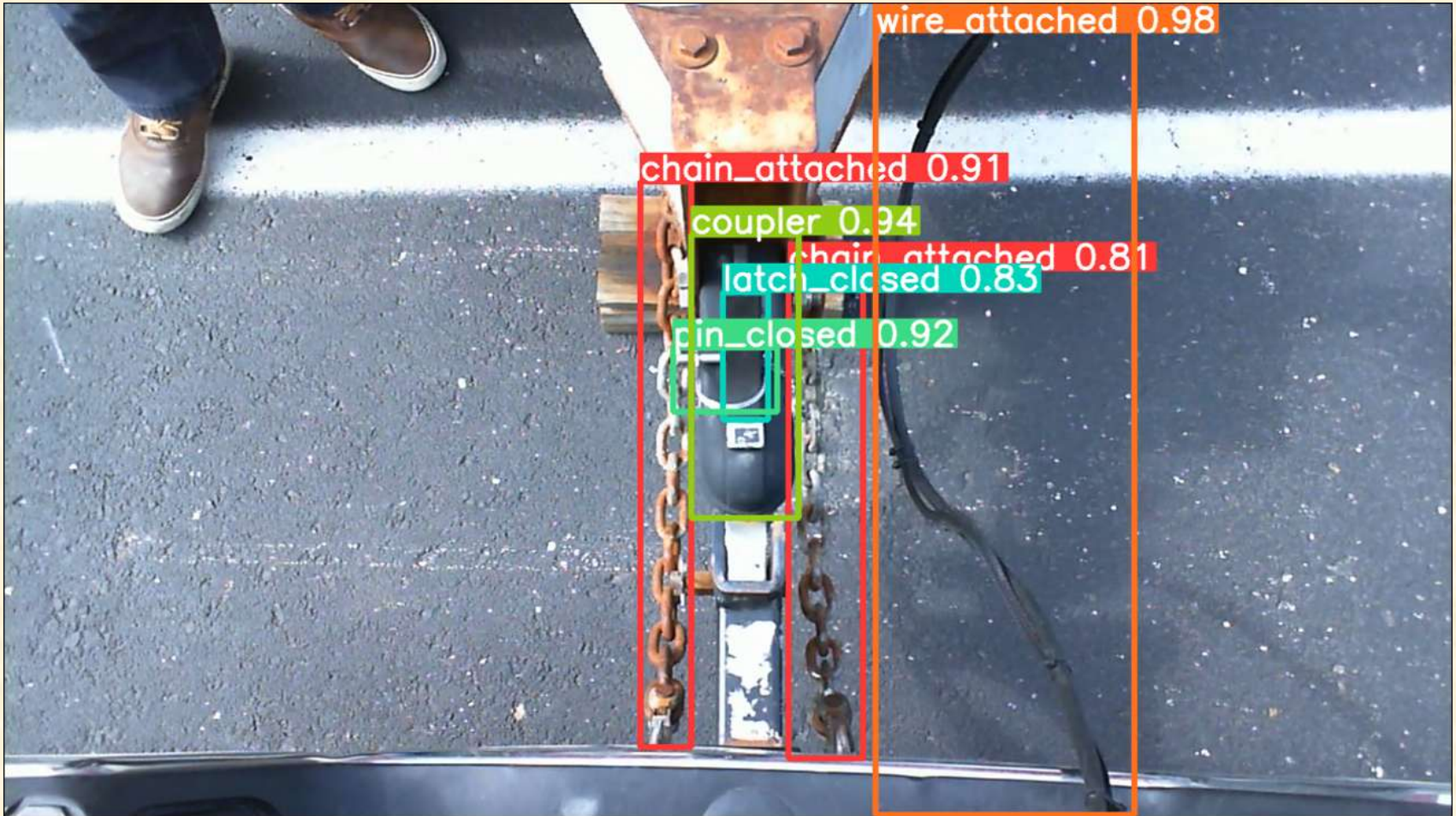
Cable Connected **PASS**

COMPLETE

Previous Next



Close-Up: Complete Hitch



What's left to do?

- Label: current data + pending more data
- Expand dataset: imitate rain/glare/dirt in camera
- Tune model: detect all components
- Tune script: handle frame extraction
- Add video handling to UI
- Add next/previous 10 images feature to UI



Questions?

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