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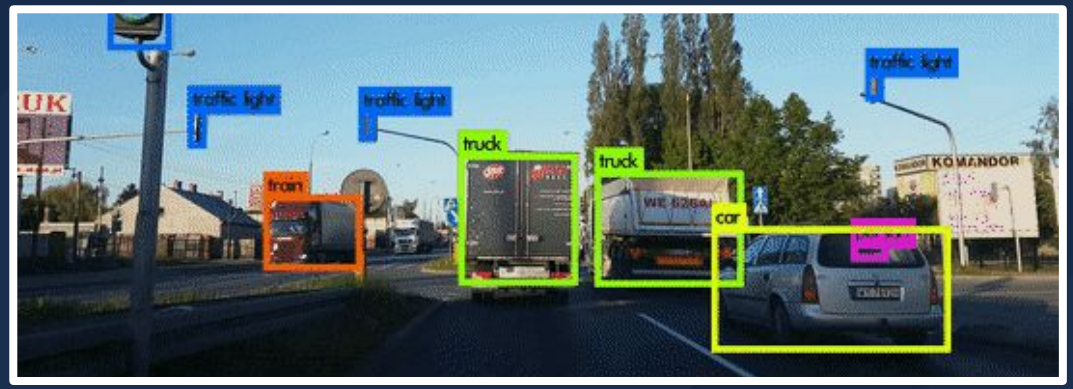
# 2D Object Detection
## Final Presentation

DSC 178 **Team 5**
June 8, 2022




CodeMentor

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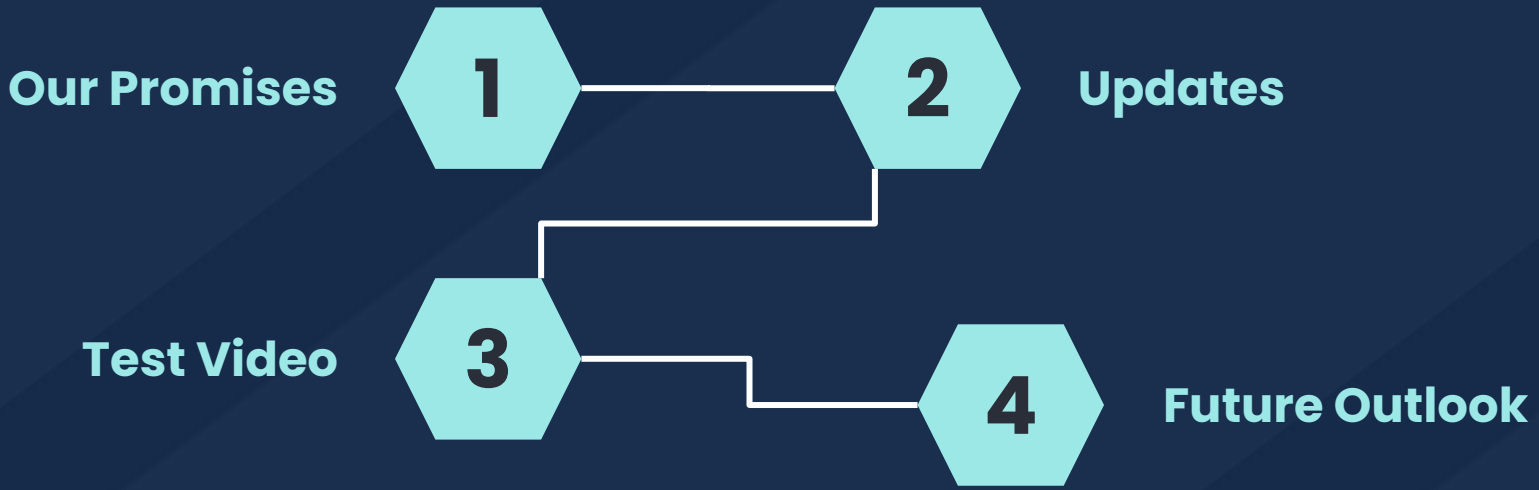

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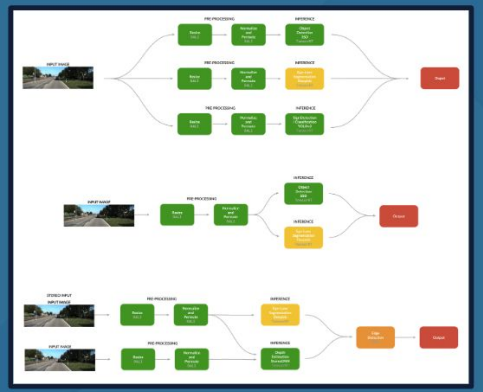
# What we Promised

## Goals

- Develop a 2D camera detection/segmentation pipeline
- Needs to detect a given object
    - (could be another car/ a cone)

NVIDIA.com



NVIDIA Technical Blog

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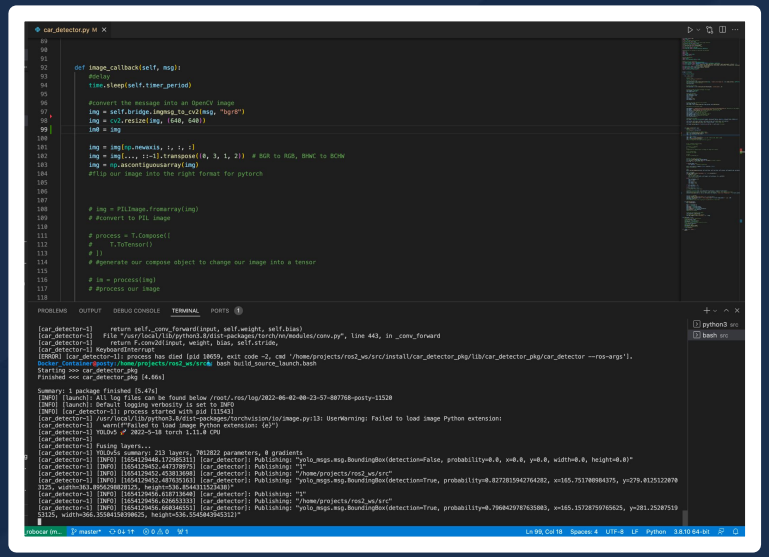
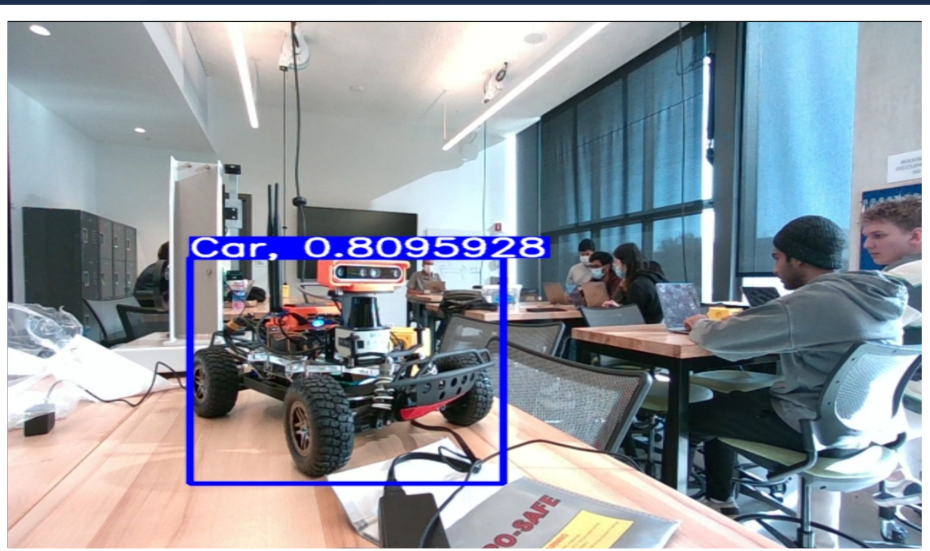
# Update: Week 10 Accomplishments




1. Modified YOLO Messages → Labeling Classes is Possibility
2. Integrated YOLOV5 with ROS2, running on Jetson CPU

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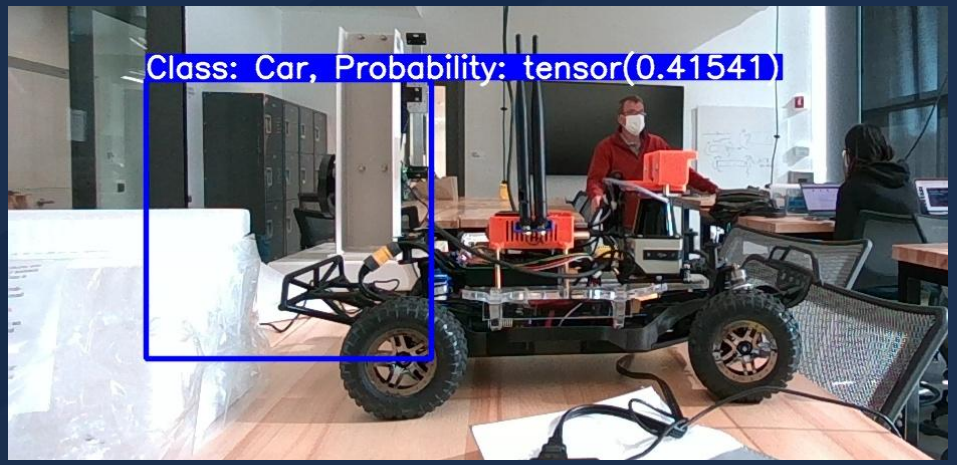
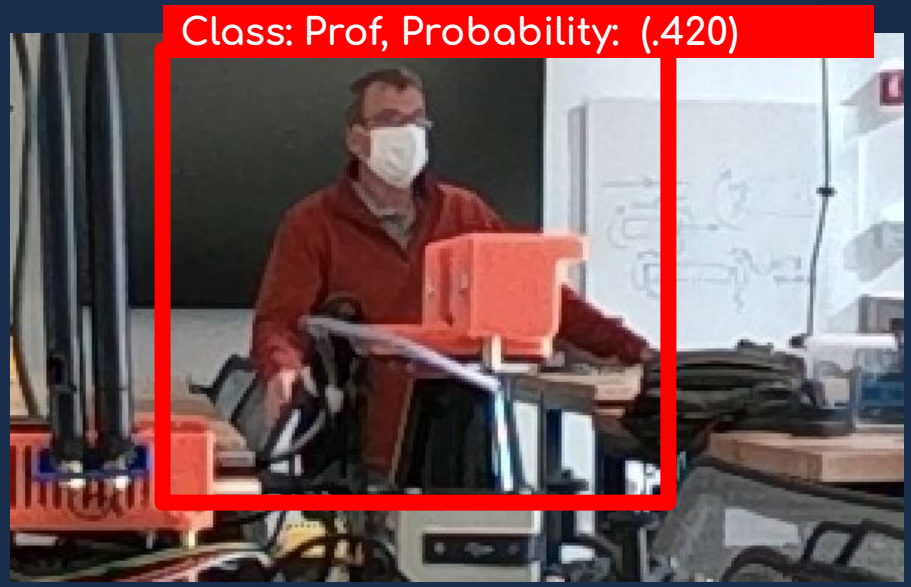
# Hiccups addressed

1. Initial errors when writing the bounding box. Scaling was also off.
2. Fixed by scaling the image down then applying the box, then scaling the image back to original dimensions



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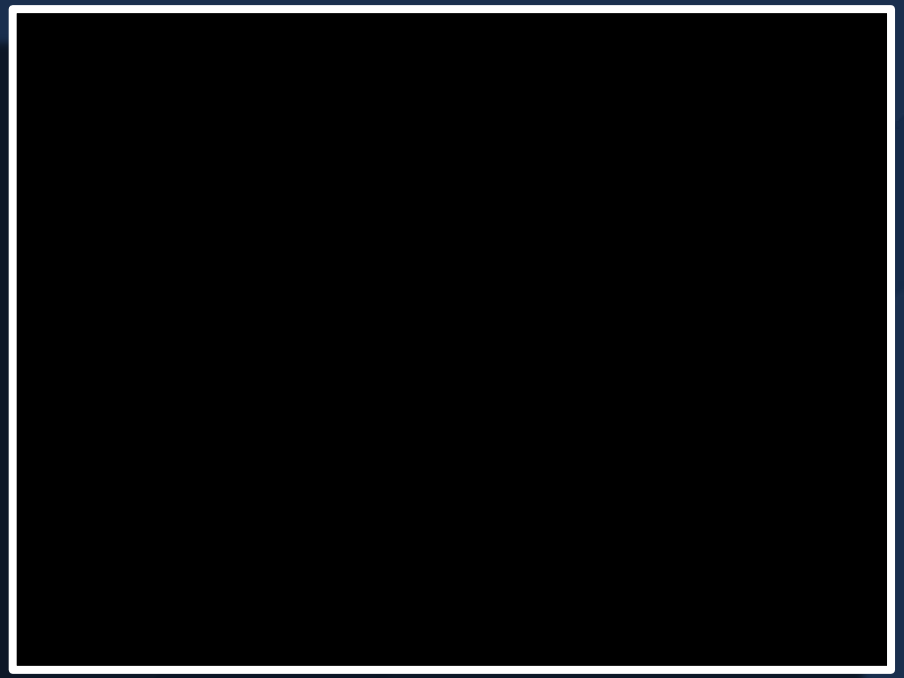
# Final Data Set Additions + Testing/Tuning

- Additional 500 labeled images added to Yolov5 dataset
- Testing of model done through live Rviz assessment
- Guided what angles / lighting may be necessary for a more sound model



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# Video Demonstrations

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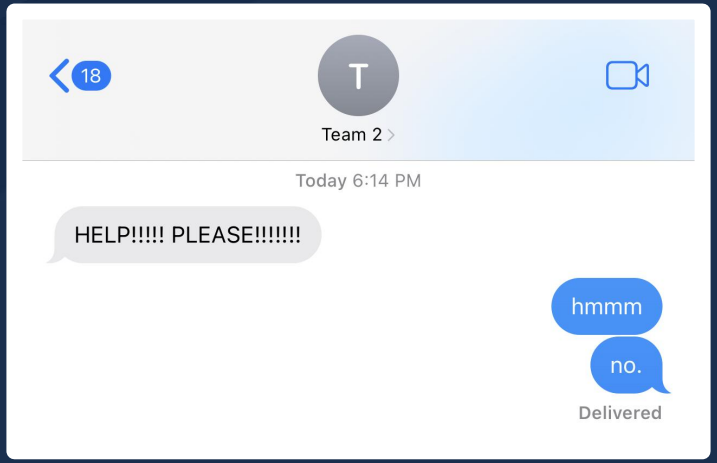
# Update: Supreme Collaborations

## Team 5 x Team 2

Integration not complete

**Our Plan:**

Help ideate about integration of our work and provide team 2 with documentation assistance if needed.




Class: Major Bag Alert, Probability: (.99)

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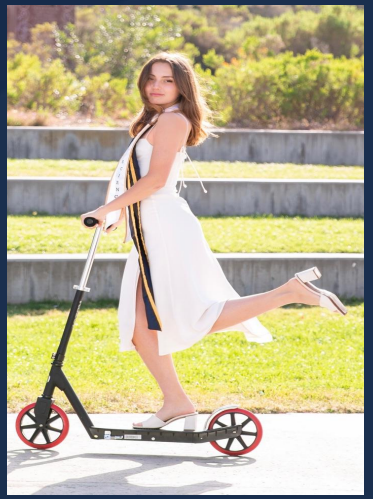
# Into the future…

- **GPU Acceleration** - run on GPU
- Improve model by adding other objects and improving ability to identify cars
  - still small struggles in different lightings, angles, distances
- Added image publisher so we can get a live feed of images
- Review Documentation. Add Video?
- Multiple object detection!

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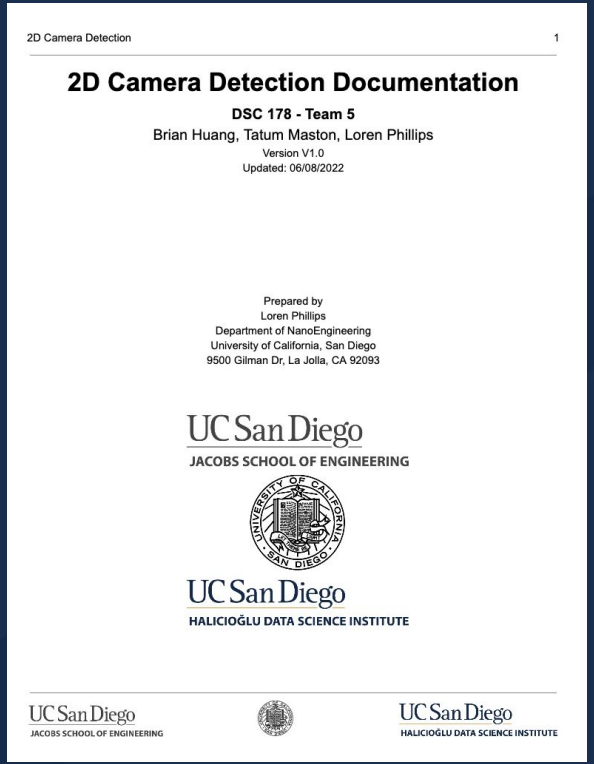
# Passing it Forward

We have committed to also publishing a written documentation on Basecamp to accompany our README.

Hopefully this will provide ease of access to our work, findings, and allow for future projects to build from ours.

Ideas and plans for future projects will be included!




**2D Camera Detection Documentation**

**DSC 178 - Team 5**

Brian Huang, Tatum Maston, Loren Phillips

Version V1.0

Updated: 06/08/2022

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# Reflection

## Didn’t Work Well:

Cannot detect multiple objects
Very very slow
Issue with Python Path

## If we had Another Week:

Create a larger dataset and labelled dataset with more variety (adding images with multiple labelled cars)
Add GPU Acceleration by building our own Docker Container

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# Acknowledgements

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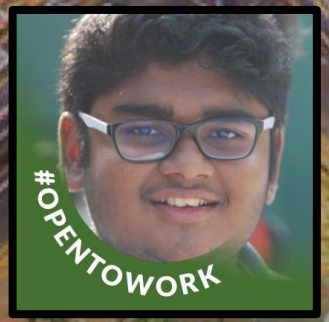


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# Questions?

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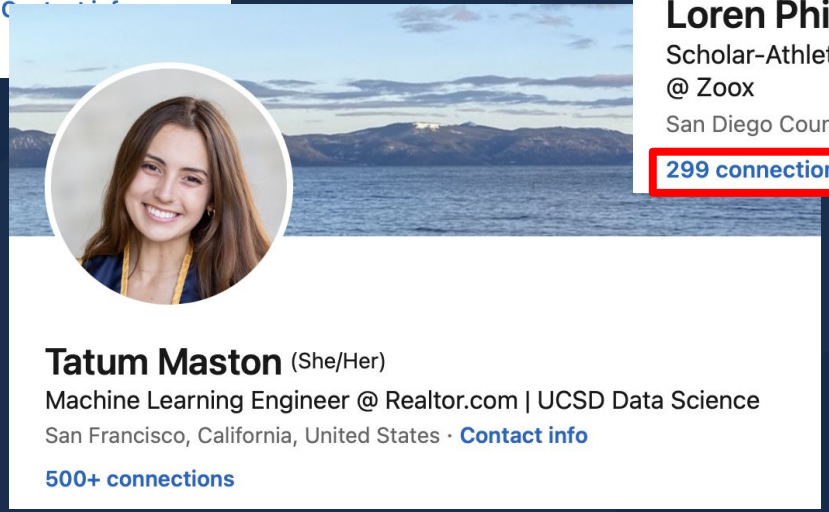
# LinkedIn Profiles

**Brian Huang** · 1st

Incoming Software Development Intern at Amazon

San Diego, California, United States · Contact info

500+ connections

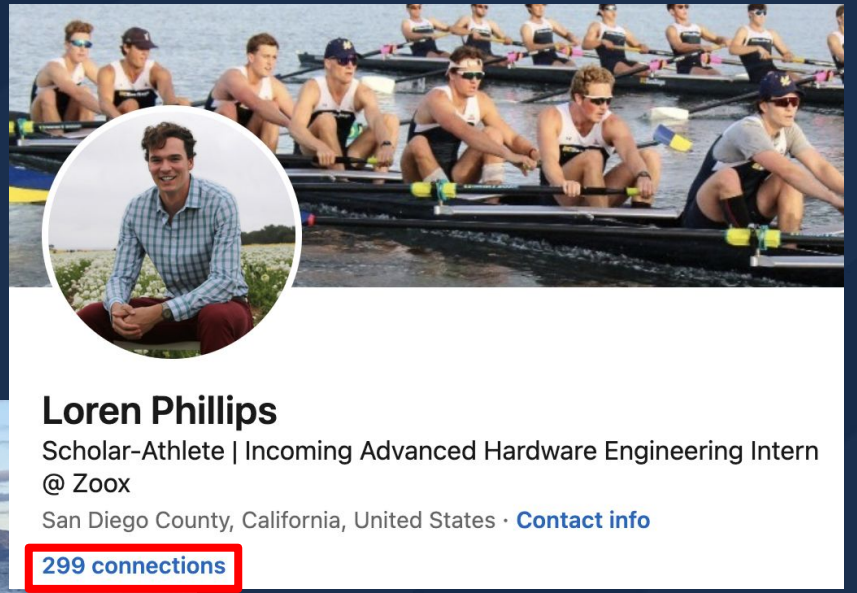


**Tatum Maston** (She/Her)

Machine Learning Engineer @ Realtor.com | UCSD Data Science

San Francisco, California, United States · Contact info

500+ connections



**Loren Phillips**

Scholar-Athlete | Incoming Advanced Hardware Engineering Intern @ Zoox

San Diego County, California, United States · Contact info

299 connections

Add Loren - He's lacking clout