From Students…
…to Professionals

Project Plan
ADAS Tagging Tool
The Capstone Experience

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Functional Specifications

• The Problem:
  ▪ Employees manually searching for video among thousands of hours of footage for videos containing specific features/environments.

• The Solution:
  ▪ Utilize computer vision to automatically tag & categorize footage based on features/environments
  ▪ Footage categorized once, then tags saved for later searching.
Design Specifications

- Process video files to extract tags
- Manually Review questionable tags
- Search for videos containing specific tags
- Create new tags
- Utilize Google’s Material Design
Screen Mockup: Process Video
Screen Mockup: Manual Review

Is this a truck?  YES  NO
Screen Mockup: Search For Tags
Screen Mockup: Create New Tag

ADAS Tagging Tool

Instructions


New Tag Name

Select Video Files

- selected_video_1.avi
- selected_video_2.avi
- selected_video_3.avi

GO
Technical Specifications

- **Python**
  - Handles backend and video processing
- **OpenCV w/ COCO dataset**
  - Computer vision library to analyze video
- **YOLOv3**
  - Algorithm for object detection
- **React.js**
  - Frontend JavaScript framework w/ HTML/CSS
- **Flask**
  - Link between front and backend
- **SQLite**
  - DBMS
System Architecture

Frontend

Backend

Data

Flask

React JS

python

OpenCV

SQLite

User
System Components

• Hardware Platforms
  ▪ Local PC

• Software Platforms / Technologies
  ▪ Visual Studio Code IDE
  ▪ PyCharm IDE
  ▪ SQLite Studio
Risks

• Meeting Client’s accuracy requirements
  ▪ Minimize the number of results to be manually reviewed
  ▪ Implement easy manual tagging system

• Identifying objects not in COCO dataset
  ▪ Clients want to identify bridges/tunnels
  ▪ Training on simpler objects (hotdog) before more difficult objects

• No experience with web app frameworks
  ▪ Unsure if we could connect the ML libraries to a web app
  ▪ Built web app with React/Flask to show you can use python for backend
Questions?