Jordan Tan

A1

1. Intelligent Simple Object Detection and Anonymous Privacy Protection Feature
2. Deep Learning for Estimating Lane Line Quality Using Retroreflectometer Ground Truth
3. Reinforcement Learning for Road Sign Detection and False Positive Elimination

For this project, I can help with the software development aspect of the project by creating the Admin UI tool because I am familiar with web design. I am also interested in the software development side of this project because I did not do a capstone project for my senior year as an undergraduate, and this will be a good opportunity to showcase my skills in this area. I have taken a React coding bootcamp and have designed two personal websites before. If we need to manage a database, then this will not be an issue because I am familiar with SQL (MySQL, PostgreSQL) and MongoDB. I can also help with the model development; from my deep learning class, I am familiar with CNNs, and I have experience working with transformer-based neural networks and PyTorch from my NLP class. In my deep learning class, I have worked with generating text captions from images.

Qualifications: taken deep learning; knowledge of PyTorch, HuggingFace, HTML, CSS, JavaScript/TypeScript, React, SQL, and data visualization using D3.

Plan:

1. Convene with team members to understand each other's strengths. There are three main things that we have to consider: synthetic data creation, model training, and UI creation.
2. Understand what data we will need
    a. Is there a small toy dataset we can use/easily create to experiment with model training?
3. Before working on developing a model, look up relevant literature for this problem to understand how others approached the problem.
    a. Text recognition
    b. Object detection
4. Create a synthetic data generator
    a. Determine what tool to use (Blender?)
5. Train/find models
    a. Using the synthetic data, train a model that detects name tags
        i. Document performance metrics
    b. We may be able to use an existing model for face recognition and text
6. While creating a synthetic data tool and training the model, create an Admin UI panel.
    a. Determine what tech stack to use. (Preferably a web application; do we have access to PhotoNodes?)

b. We need to deliver an admin interface for model training and rule configuration
    i. For model training, determine what toggles we want the user to adjust
        1. Hyperparameters
        2. Synthetic data parameters
        3. etc.
    ii. Rule configuration can be done after model training through toggling what conditions are needed to blur text.
c. For each image, we will need to extract what text was blurred; the user facing application will not have access to this information.