**INFO 7390 FINAL PROJECT REPORT**

**Project Topic:**

Object Detection for autonomous vehicles using YOLO and SSD

**Team Name:**

Akatsuki

**Team Members:**

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**Description:**

1. **Importance:**

Over the last decade, there have been significant advances in machine learning, artificial intelligence, and deep learning. A significant number of applications involving these technologies have taken the front row. Autonomous cars are one such application that is expected to have a revolutionizing impact on human lives. These cars might be the first real integration of robots and human interaction. However, before this becomes a reality, cars need to learn to mimic the human brain. Self-driving cars primarily have 4 critical tasks to perceive the world.

* Object Detection
* Classification
* Tracking
* Segmentation

1. **Goals:**
2. Our project focuses on building a model to train the cars to detect objects such as car, person etc. We have used 2 object detection algorithms YOLO (You Only Live Once) and SSD (Single Shot MultiBox Detector) to achieve our goal.
3. YOLO merges what was previously a multi-step process, using a single neural network to implement both predictions of bounding boxes for objects that have been detected and classification
4. SSD implements classification and object localization in a single forward pass of the network, and uses multibox technique to put bounding boxes around an object
5. Below are the steps followed in our project:

* Preparing the dataset
* Installing dependencies
* Setting up the YAML files for training
* Training the model
* Hyperparameter tuning
* Visualizing data
* Testing the model on test images