**CSE541: - Computer Vision**

**Weekly Report - 6**

**Section Number – 1**

**Group Name: - string the\_boys;**

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Task performed during the week:

* Explore optimization techniques such as model quantization, pruning, and compression to reduce the model size and improve its inference time.
* Investigate hardware acceleration techniques such as GPU and FPGA to speed up the inference process.
* Integrate the road sign recognition system with a robotic platform to demonstrate its real-world application.
* Used data augmentation techniques such as rotation, flipping, and shifting to increase the size of the dataset and improve the model's robustness.
* Experiment with different hyperparameters to optimize the model's performance on the given task and dataset.
* Trained a Convolutional Neural Network (CNN) model on a large dataset of road sign images to classify them into different classes.
* Conduct tests to evaluate the speed and accuracy of the system on various hardware platforms and under different conditions.

Outcomes:

* Dealing with a large number of classes and imbalanced data where some classes had very few samples had hindered the accuracy of model.
* Used augmentation techniques and oversampling the minority classes to train the classes with few samples.
* Model’s performance was improved by adjusting and changing different hyperparameters and achieved better accuracy.

Task to be performed in next week:

* We will evaluate the performance of the best model on the test set and report the final accuracy, precision, recall, and F1 score.
* Analyze the confusion matrix to identify which classes are most difficult to classify and improve the model's performance on those classes.
* Deploy the model as a real-time road sign recognition system using computer vision and test it in a real-world setting.
* Start writing the final report summarizing the project, including the problem statement, methodology, results, and future work.