ECE 579 Intelligent Systems, Winter 2024

Project Initiative Report

**Project title: Facial Recognition System for Vehicle Interior Settings.**

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**Project Description**: In this project we will design and develop a facial recognition system that allows a user to be recognized before entering his/her vehicle. Once the system recognizes the user, it will load his or her preferences for the vehicle’s interior (seat position: incline/recline and travel, cabin temperature and steering wheel position) and send a message to the CAN bus with these parameters for processing by other ECUs.

One of the main objectives of this project is to compare the performance of the system using a desktop computer vs in an embedded environment using an STM32H747 microcontroller. Once the system is developed for the desktop, we will synthesize it using STM32Cube’s AI tool and run it the embedded target for performance evaluation.

**Data Description:**

1. Describe the type of data being used in your project.

Data will be a collection of images for facial recognition. The file format can be jpg or png.

1. Where you plan to get the data (provide a web address).

We plan on taking several pictures of a person and using Keras’s ImageDataGenerator to create variations to complete our database. A second option is to use pictures of a famous person. We need to locate a good database for this.

1. The size of the data, e.g., number of samples.

Around 500 images.

1. Number of classes, number of attributes.

TBD

1. Other information that helps you understand your data.