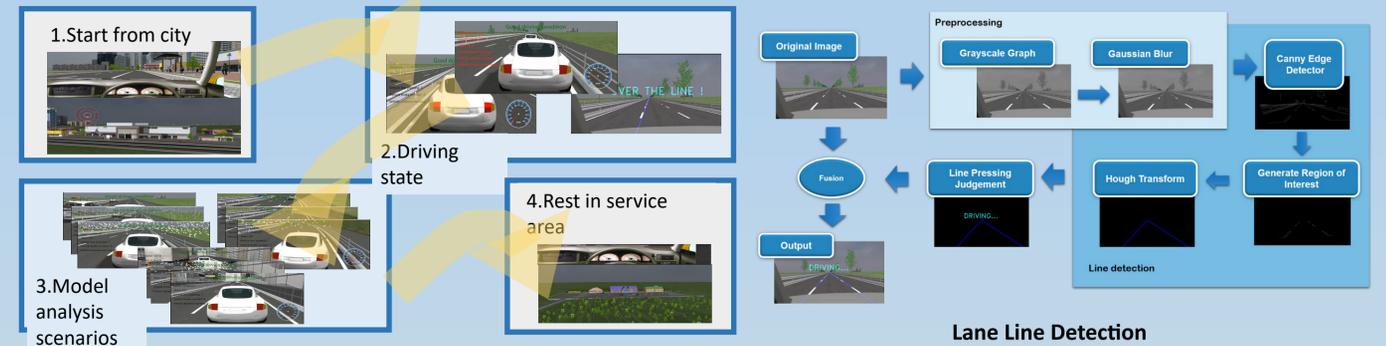# Fatigue Driving Assistance Monitoring System
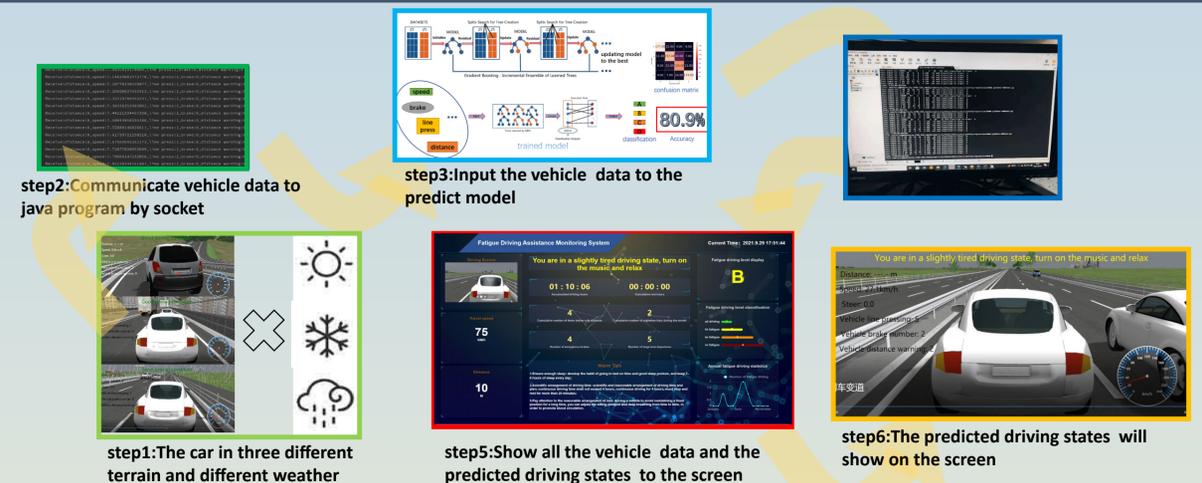
Team : Highways

Overview

Fatigue driving refers to the phenomenon that the driver's physiological and psychological functions become dysfunctional after a long period of continuous driving, and the driving skills objectively decline. To counter the possible dangerous effects of fatigue driving, this solution use UC-WinRoad software to simulate various fatigue driving scenarios and transmit vehicle data such as speed and driving time to the client in real time to remind drivers to take proper rest when there is a risk of fatigue driving,thus reducing traffic accidents caused by fatigue driving.
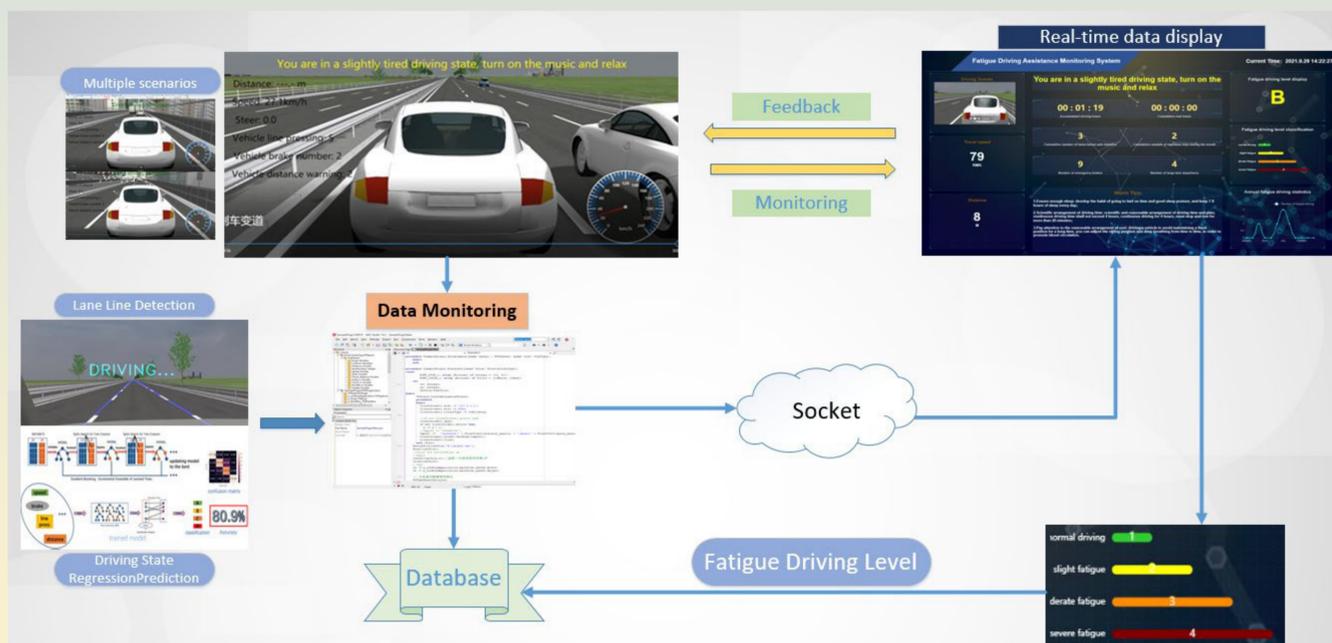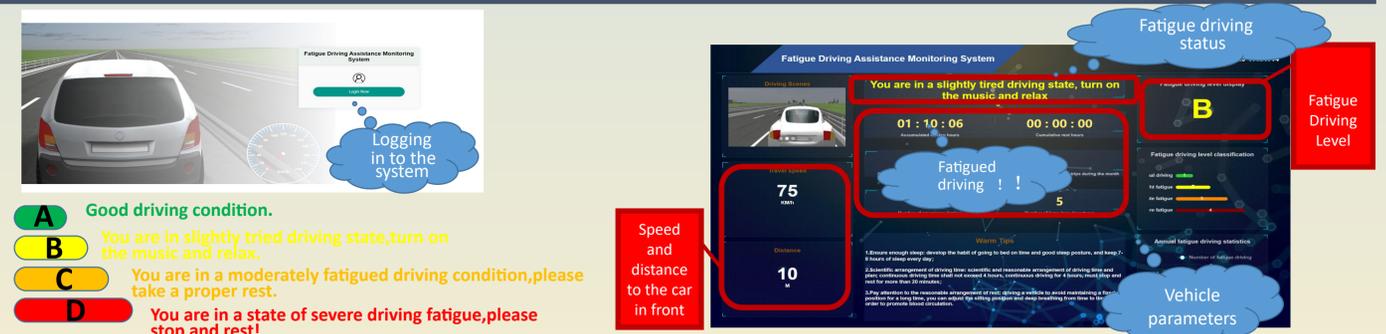
Severe fatigue

In severe fatigue, subconscious operation or short periods of sleep often occur, and the ability to control the vehicle is lost in severe cases.

Moderate fatigue

In moderate fatigue, the operating action is sluggish and sometimes even forgets to operate.

Mild fatigue

When mildly fatigued, untimely and inaccurate gear shifts can occur.

System Architecture

Simulated Driving Scenarios (UC-win/Road)

1.Start from city
2.Driving state
3.Model analysis scenarios
4.Rest in service area

Lane Line Detection

Preprocessing: Original Image → Grayscale Graph → Gaussian Blur → Canny Edge Detector → Generate Region of Interest → Hough Transform → Line Pressing Judgement → Fusion → Output

Line detection

Project Architecture

step1:The car in three different terrain and different weather

step2:Communicate vehicle data to java program by socket

step3:Input the vehicle data to the predict model

step5:Show all the vehicle data and the predicted driving states to the screen

step6:The predicted driving states will show on the screen

Demo

Logging in to the system

A Good driving condition.

B You are in slightly tired driving state,turn on the music and relax.

C You are in a moderately fatigued driving condition,please take a proper rest.

D You are in a state of severe driving fatigue,please stop and rest!

Fatigue driving status

Fatigued driving ！！

Speed and distance to the car in front

Vehicle parameters

Fatigue Driving Level

Future Tasks and Ideas

1. Use smarter prediction algorithms to collect driver and vehicle data for accurate prediction
2. Gives voice prompts and automatically plays favorite music when you are tired
3. Hints on the location of the nearest rest area and how long it takes to get there