Graphic Display Interface for the AIS based Intelligent Transportation System

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Background

AIS Gene Library Based Real-Time Resource Allocation on Time-Sensitive Large-Scale Multi-Rate Systems

The simulink module that has been developed is a software simulation platform for the project.

Develop a GUI for the simulink module to analyze and display the result of the module graphically.

Project Description

The Graphic Display Interface

Control Panel

Status Window

Graphic Display
Project Description

Basic structure of the Graphic Display Interface for the AIS Based Intelligent Transportation System

Learning & Work

First week

- Get familiar with the Matlab and Simulink
- Learn the method to build a simple GUI
- Finish the Control Panel of the Graphic Display Interface
- Save the initial parameters to workspace
Why Matlab GUI?

• The simulink module
• The large amount of computation and visualization tools
• The open programming environment

Second week

• Extract the simulation result to the workspace for GUI to display
• Develop the Status Window of the Graphic Display Interface
• Begin to work on the Graphic Display Region
Learning & Work

Third week

• Improve the outlook of the GUI
• Display the cars with moving pictures
• Display the velocity of the car with a speed bar
• Display the head angle of the car with a dial
• Add a pop up box for simulation

GUI Designing
GUI Designing

Graphic Display Region:
- Transportation system animation
- Velocity & Head Angle

Control Panel:
- Parameter setting
- Simulink control

Status Window:
- Message history
- Position & Status

Control Panel

- Set initialization parameters
- Control the GUI
GUI Designing

• Set initialization parameters

- Number of cars
- Velocity of cars
- Simulation length
- Color of cars
- Drivers' type

For mock values:

- 1. Normal
- 2. drunk1
- 3. drunk2
- 1. Both blue
- 2. Both red
- 3. Blue & red
- 4. Red & blue

It is the initial speed of each car.

GUI Designing

• Control the GUI

- Simulate
- Run
- Close

Run the simulink module
Run the display region
Close the GUI
GUI Designing

- Pop up box

Status Window

- Command Status
- Cars Position (X, Y)
- Cars Status (stop, drive, wait, follow)
GUI Designing

Graphic Display Region

- Virtual Scene
- Parameter Display Board

Make lanes occupy a larger place in the background
Dim the color of the environment
Add a stop sign at the corner
GUI Designing

- Parameter Display Board
  - The velocity of the car in real time
  - The head angle of each car
  - Symbols to help analyze

GUI Designing

- Head angle of Cars

Needle = direction of the car
• Velocity of Cars

Stop

Drive

• Meanings of Symbols

Normal  Car1  Stop

Drunk  Car2  Drive
GUI Display

Show how GUI works.

Thank You!