97-1 大葉大學 選課版課綱

基本資訊			
課程名稱	智慧型汽車之控制設計:TWN	科目序號 / 代號	1466 / EDR5180
開課系所	電機工程學系博士班	學制 / 班級	研究所博士班1年1班
任課教師	吳幸珍	專兼任別	專任
必選修 / 學分數	選修 / 3	畢業班 / 非畢業班	非畢業班
上課時段 / 地點	(三)234 / H371	授課語言別	中文

課程簡介

This course is to provide graduate student the systematic design of the automatic driving system embedded in the smart car Taiwan iTS-1. Taiwan iTS-1 is a heterogeneous system including various sensors, core controller, interfacing and mechanisms to carry out automatic driving. A hierarchical-control autonomy structure to achieve integrated longitudinal and lateral control on highway and urban-road environments. Upper-level control analyzes the traffic situation, determines a driving mode and reference signals. Vehicle-body control ｅｘｅｃｕｔｅｓ real-time control-signals tracking. Both human intelligence and behaviors are integrated into vehicle-body control. Collision warning and avoidance maneuvers are embedded in this car. Furthermore, passengers ’ comfort is also considered in design.

課程大綱

I. Introduction
1. Mastering Simulink
2. Introduction to CarSim
3. Vehicle Dynamics Simulation using CarSim
Scene Setup
Scene Setup
4. Introduction to Automatic Driving System
II. Autonomous Driving System
5. Vehicle Overview
6. Lane-keeping Design
? Vision-based system
? DSP-based system
7. Lane-changing Design

8. Car-following Design
? ICC mode
? ACC mode
? Platoon mode
? Stop-and-Go
III. Driving Assistance System
9. Collision Warning/Avoidance Maneuver

10. Comfort Estimation
11. Integrated Lateral and Longitudinal Controller
Final Examination (CarSim Demo)

基本能力或先修課程

no