

97-1 Preliminary Syllabus, Da-Yeh Univ

Information			
Title	智慧型汽車之控制設計:TWN	Serial No. / ID	1466 / EDR5180
Dept.	電機工程學系博士班	School System / Class	研究所博士班1年1班
Lecturer	吳幸珍	Full or Part-time	專任
Required / Credit	Optinal / 3	Graduate Class	NO
Time / Place	(三)234 / H371	Language	Chinese

Introduction
<p>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 e x e c u t e s 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.</p>

Outline
<p>I. Introduction</p> <ol style="list-style-type: none"> 1. Mastering Simulink 2. Introduction to CarSim 3. Vehicle Dynamics Simulation using CarSim <ul style="list-style-type: none"> Scene Setup Scene Setup 4. Introduction to Automatic Driving System <p>II. Autonomous Driving System</p> <ol style="list-style-type: none"> 5. Vehicle Overview 6. Lane-keeping Design <ul style="list-style-type: none"> ? Vision-based system ? DSP-based system 7. Lane-changing Design 8. Car-following Design <ul style="list-style-type: none"> ? ICC mode ? ACC mode ? Platoon mode ? Stop-and-Go <ul style="list-style-type: none"> . Driving Assistance System 9. Collision Warning/Avoidance Maneuver

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

Prerequisite

no