EE405A
Experiment Session
Outline

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Experiment Session

Goals

- Learn a set of software libraries and tools for robotic applications, Robotics Operation System (ROS).
- Implement Control, Planning, Mapping and Localization modules for autonomous driving.
- Build and control a vehicle platform for autonomous driving on a track.

Class Hours (Experiment Session)

: Online experiment class by TAs: Wednesday(7~8:30pm)

※ Offline experiment will be determined soon.

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Class Outline

Period:	Topics		Class & Experiment	
	Lecture Session	Experiment Session	TA class	Assignment
Week 1	Introduction to the class	-	-	-
Week 2	Basics of Robot Systems	ROS – 1	Online	-
Week 3	History of Self-driving Cars	ROS – 2	Online	HW1
Week 4	Vehicle Dynamics	ROS – 3	Recorded	-
Week 5	Vehicle Control I	Vehicle Control	Recorded	HW2
Week 6	Navigation Sensors: INS	Platform – Software Config.	Recorded	-
Week 7	Navigation Sensors: GPS	Platform – Hardware Config.	-	HW3
Week 8	-		-	-
Week 9	Guidance	Mapping & Localization	Recorded	HW4
Week 10	Path Planning	Localization – 2	Recorded	-
Week 11	Visual Navigation	Motion Planning	Recorded	HW5
Week 12	LiDAR-based Navigation	Object Detection – 1	Recorded	-
Week13	Deep Learning based approach	Object Detection – 2	Recorded	HW6
Week 14	Putting them all together: System Operation	Project	-	-
Week 15	How we proceed from here: future robots	Final Project Review	-	-
Week 16	Final Individual/Team Demo		-	-

※ In the **TA classes**, we will provide **background knowledge** and **details** about the experiments.

※ **Online TA class** will be conducted by **Zoom until Week 4.**

※ **Recorded videos** will be uploaded at **KLMS from Week 5.**

※ **Offline experiment** will be conducted at **KI building (E4), C303.**

※ This schedule may be subject to change as the semester processes.

Team Building

- Please send an email to hynkis@kaist.ac.kr for the team building.
- You need to inform us the following information.
    - **Your project type**: hands-on experiment / simulation
    - **Your ID number and name**
        - If you have team members, you need to write all your member's info.
        - Only one of the team members needs to send an e-mail.
        - If you don't, we will assign you in a team later.
- The number of each team member will be from **4 to 5**.
- The deadline of team building is **until 21.03.24**.
- After that, the rest of the students are randomly assigned to other teams.
- The team building results will be published through a google spreadsheet.

Offline Team Scheduling

- We plan to appropriately distribute the participation time for each team based on the experiment time listed on Syllabus.
  (Mon 14:30~20:30, Tue 14:30~20:30, Fri 09:00~15:00)

- After the team building, a survey will be scheduled to investigate the preferred time for each team.

- We will consider providing additional experiment time to ensure sufficient experimentation for the teams with inadequate experiment time.

Q & A

Email : hynkis@kaist.ac.kr