

Day 1 - Perception for Aerial Robotics

Time	Speaker	Topic	Short Abstract
08:30		Summer School Intro	
08:45	Dr. Helen Oleynikova Senior Researcher, Autonomous Systems Lab, ETH	3D Perception for Planning on-board aerial robots	For drones, every gram counts, which limits the amount of compute power they can carry on-board. However, collision avoidance and perception of 3D, potentially cluttered environments is very important for fast-moving robots: how can we balance these two needs? How can drones perceive their environments in high enough detail to do collision avoidance, and with low enough computational cost to run on-board?
09:45		Coffee break	
10:00	Marco Antonio Montes Grova Senior Perception & AI Engineer, CATEC	Aerial Robots Application for Inspection and Maintenance in GNSS-Denied Industrial Environment and Civil Infrastructures	Robotics solutions for inspection and maintenance tasks increase efficiency as well as safety for human workers. During this talk, we will discuss different use cases of aerial robots for industrial inspection and maintenance applications, where a reliable GNSS signal is not available. We will analyze perception algorithms for these use cases, focusing on real-time solutions running on on-board computers, necessary for aerial autonomous inspection tasks.
11:00		Camera Theory	Camera Theory Basics: Pinhole camera model and conversion from image plane to 3D coordinates
11:30		Lunch Break	
12:30	Qi Zhang PhD Student, Tampere University Antonia Hüfner PhD Student, ASL, ETH	Target detection using classical Computer Vision methods	Lecture with Exercises
13:15	Andrea Berra PhD Student, CATEC Riccardo Franceschini PhD Student, EURECAT	Intro to ROS - Part 1	Lecture with Exercises
14:30		Coffee break	
14:45	Andrea Berra PhD Student, CATEC Riccardo Franceschini PhD Student, EURECAT	Intro to ROS - Part 2	Lecture with Exercises
15:45	Kashita Niranjana Udayanga PhD Student, DTU	Target detection using Deep Learning	Lecture with Exercises
16:45		Final Remarks	

Day 2 - Control for Aerial Robotics

Time	Speaker	Topic	Short Abstract
08:30		Day Introduction	
08:35	Dr. Carlos de Cos Education Customer Success Engineer, Mathworks		
10:15		Coffee break	
10:30	Dr. Thomas Stastny Senior Researcher, Autonomous Systems Lab, ETH	Exploring the Challenges and Realities of Aerial Field Robotics	Join us for a dive into field robotics with the Aerial Robotics Group at the Autonomous Systems Lab. We'll discuss the practical challenges and lessons learned from projects spanning Greenland's glaciers, the Swiss Alps, and Ukrainian farms, with topics including aerial photogrammetry, agricultural monitoring, and hybrid vehicle control. Through insights into sensing, modeling, control, and path planning, we'll explore the realities of deploying autonomous aerial robots in the wild.
11:30	Tong Hui PhD Student, DTU Antonio Gonzalez Morgado PhD Student, Seville University	Eyes in the Sky: Visual Servoing for Enhanced UAV Performance	This presentation provides an overview of visual servoing and its applications in Unmanned Aerial Vehicles (UAVs). It covers the background, state of the art, and future prospects of visual servoing, including sensor technologies, methods, and real-world use cases in UAV navigation and control.
12:00		Lunch Break	
13:15	Fernando Ruiz Vincueria PhD Student, Seville University Hameed Ullah PhD Student, Naples University	Connecting Simulink and ROS	Lecture with Exercises
14:00	Fernando Ruiz Vincueria PhD Student, Seville University Hameed Ullah PhD Student, Naples University	Using Simulink to control an Aerial Robot in Gazebo	Lecture with Exercises
15:00		Coffee break	
15:15	Eugenio Cuniato PhD Student, ASL, ETH Fernando Ruiz Vincueria PhD Student, Seville University	Implementing a Visual Servoing Controller	Lecture with Exercises
16:45		Final Remarks	

Day 3 - Control for Aerial Robotics

Time	Speaker	Topic	Short Abstract
08:30		Day Introduction	
08:45		Industrial Talk	
10:00		Coffee break	
10:15		Academic Talk	
11:30	Manuel Fernandez Gonzalez PhD Student, DTU Julien Mellet PhD Student, Naples University	Haptic Interfaces	
12:00		Lunch Break	
13:00	Manuel Fernandez Gonzalez PhD Student, DTU Julien Mellet PhD Student, Naples University	Haptic Interfaces Competition	
14:30	Viswa Narayanan Sankaranarayanan PhD Student, Luleå University Achilleas Santi Seisa PhD Student, Luleå University	Delayed Teleoperated Systems	Lecture with Exercises
15:00		Coffee break	
15:15	Achilleas Santi Seisa PhD Student, Luleå University Gerasimos Damigos PhD Student, Ericsson AB	Delayed Teleoperated Systems	Lecture with Exercises
16:45		Final Remarks	