

## Course Description

### Ethics in Drone and Robotic Systems Design - 5 ECTS (FALL)

MSc elective offered to students in:

- Drones and autonomous systems
- Advanced robot technology

This course introduces students to concepts in ethics and shows how these concepts can be applied to improve the design of drone and robotic systems.

#### Knowledge

- Real-world case studies with examples of drones and robots developed using ethically informed approaches
- How participatory design and value sensitive design methods can be used to build drones and robots which actively support values such as human welfare, freedom, autonomy, privacy, calmness, and environmental sustainability
- Ethics of technology and how it applies to the design of drone and robotic systems
- How the design of drones and robots impacts society
- Embodied values and “technological neutrality”
- Responsible research and innovation (RRI), and the responsibility of drone and robotics engineers
- The use of ethics checklists, ethical frameworks, and ethical standards such as IEEE P7000 “Process for Addressing Ethical Concerns During System Design”
- How drones and robots can be developed in an interdisciplinary and cross-disciplinary way
- Value sensitive design theory, including conceptual, empirical, and technological phases
- Methodologies within value sensitive design, including stakeholder analysis, value scenarios, envisioning cards, and value-oriented prototyping
- Identification of some of the risks that drones and robots pose, and approaches such as “capability caution” for mitigating these risks in the design phase

#### Skills

- The ability to design drones and robotic systems in a way which actively takes ethics, human values, and social context into account
- How to analyze a drone or robotic system based on ethics and value sensitive design methods, and use that analysis to improve the design

#### Competencies

- Apply ethically informed and value sensitive design methodologies to the development of a specific drone or robotic system

#### Exam conditions

- An oral examination graded on the 7-point scale
- Internal grading with co-examiner