

Tutorial: UAV based Remote Sensing

Presenters: Prof. Raul Queiroz Feitosa (PCU of Rio de Janeiro, Brazil) and Dr. Petra Helmholz (Curtin University, Perth, Australia)

Content: The workshop covers an introduction into UAV systems including their sensors and specification followed by UAV specific flight planning and image processing procedures. Furthermore, an introduction into recent Machine Learning approaches for Remote Sensing image analysis suitable for not only UAV images will be presented, including Deep Learning methods.

Target group: PhD students/researchers/practitioners

Level: ~~beginner~~/intermediate/experts

Duration: ~~half-day~~/full-day

Program overview

Session 1 (90 min): Introduction into UAV Systems (Petra)

- Introduction
- Components of UAV platforms
- UAV platforms suitable for surveying
- Sensors
- Regulations

Session 2 (90 min): UAV image data capturing and processing (Petra)

- Field work (Flight planning, Ground Control Points, Targets)
- Data Processing
- Applications

Session 3 (90min): Fundamentals of Remote Sensing (Raul)

- Fundamentals
- Mono and Multitemporal models

Session 4 (90 min): Segmentation and Classification (Raul)

- Deep Learning (Fundamentals, Autoencoders, Convolutional Neural Networks, Fully Convolutional Networks, Generative Adversarial Networks)
- Sample applications (semantic segmentation, change detection, crop recognition)