Seafloor imaging and mapping
Automated analysis of sensor data

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Synthetic aperture sonar imaging

Challenge: Create a sonar image of the seafloor in the highest possible resolution and quality

Potential topics:
- Advanced imaging techniques
- Adaptive techniques in sonar
- Model based imaging
Synthetic aperture sonar interferometry

Challenge: Create bathymetric maps of the seafloor in the highest possible resolution and quality

Potential topics:
- Multi-view interferometry
- Multi-sensor fusion
- Model based 3D reconstruction
Intelligent sensing in sonar

Challenge: Control the autonomous underwater vehicle and the sensor. Adapt to the ocean environment and the task. Optimize signal processing.

Potential topics:
- Adaptive sensor control
- Vehicle autonomy
- Environmentally adaptive sonar
Automated analysis of sensor data

Challenge: Situation perception through automated analysis of sonar and camera imagery

Potential topics:

• Tracking of seafloor pipelines
• Change detection
• Automatic target recognition (ATR)
• Scene characterization

Now, what?
Master projects

Technology: Synthetic aperture sonar

Scientific fields:
- Statistical signal processing
- Array signal processing
- Imaging
- Intelligent sensing

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Master projects

Technology: Automated image analysis

Scientific fields:
• Digital image processing
• Statistical signal processing
• Pattern classification
• Data fusion

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