

Master topics
Image analysis
Digital Signal Processing and
Image analysis Group

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Study program priority

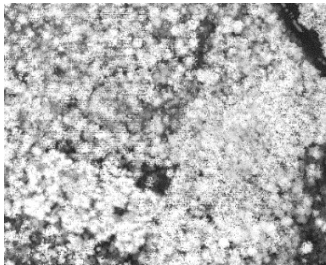
1. Data science or Computational Science
2. ELITE
3. Other IFI-programs

Limited capacity in supervising image analysis/ML topics

Two types of theses

- Focus on an application, find the best methods for this problem
- Focus on methods, study a particular method/algorithm

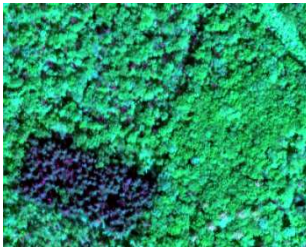
Remote sensing: forest classification based on lidar and hyperspectral images



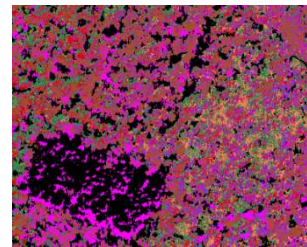
(a) Vegetation height in lidar image



Natural colour channels from hyperspectral image



False colours display from hyperspectral image



Unsupervised pixel classification

In cooperation with Norsk Regnesentral
Main supervisor: Anne Solberg

Remote sensing: detection of cars in aerial/satellite images

Detect moving cars for
pollution monitoring

Challenges:

- Parked cars
- Shadows

Deep learning possible



Typical road, aerial photo

In cooperation with Norsk Regnesentral
Main supervisor: Anne Solberg

Masters on medical imaging

Co-supervised with Oslo University Hospital

Deep learning on medical images

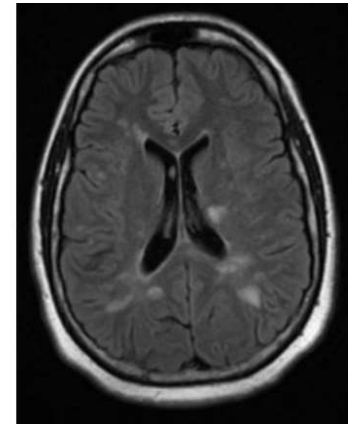
Partly open datasets, partly OUS data that needs to be analyzed on OUS GPU-servers.

OUS have not yet specified exactly which problems students can work on, but they will in the coming weeks.

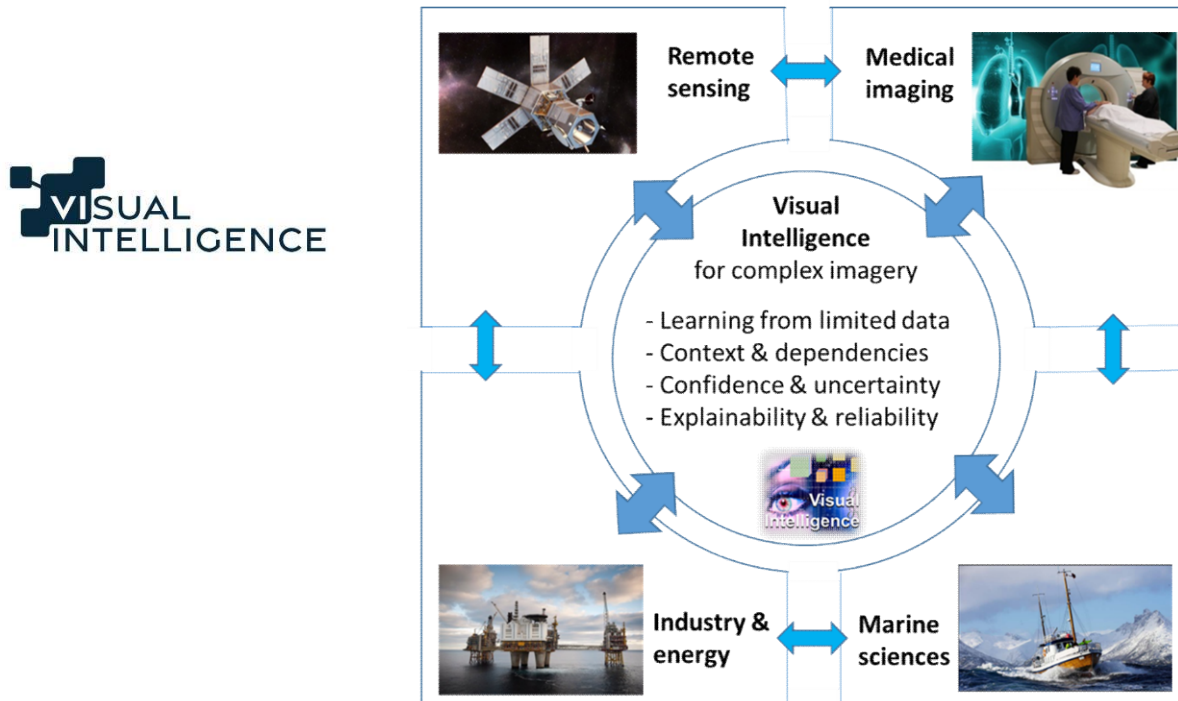
Example of current theses with OUS

- Segmentation of MR images of the brain for multiple sclerosis
- Segmentation of MR images of the brain for alzheimer

Figur: *Multippel sklerose sees på MR-bilder ved en rekke hvite flekker i hjernen. Volumet av disse flekkene representerer sykdommens alvorlighetsgrad, og er viktig for å velge rett behandlingstilnærming.*



Next generation deep learning for images



New SFI Visual Intelligence from 2021 (with UiT and NR)
Can define master topics on the topics above

Advancing deep learning on images

- Robustness of deep learning
 - Learning with limited data
 - Uncertainty in deep learning
 - Explainability in deep learning
-
- Concrete thesis proposals can be defined for 1-2 of these subjects. Send an email.