

UiO : **Institutt for informatikk**

Det matematisk-naturvitenskapelige fakultet

ELITE – Signal Processing and Imaging

CS – Imaging and Biomedical Computing

DS – Digital Image Processing

Course aspects, Research, ... and beyond

12 August 2025





https://www.mn.uio.no/ifi/english/research/groups/dsb/resources/2025-08-12_master-kickoff-dsb.pdf

1) PRESENTATION ROUND, students

- Name
- Master programme
- Bachelor grade
- Bachelor university
- A fact/fun fact about yourself

Digital signal processing and image analysis group (DSB)

Group
leader

Section
leader

Permanent



Anne



Ali



Peter



Andreas



Adín



Anis



Yücel

Adjunct



Are
(NR)



Andreas
(ICGI/OUS)



Eigil
(GEVU)



Roy
(FFI)



Ole Marius
(Sonair)

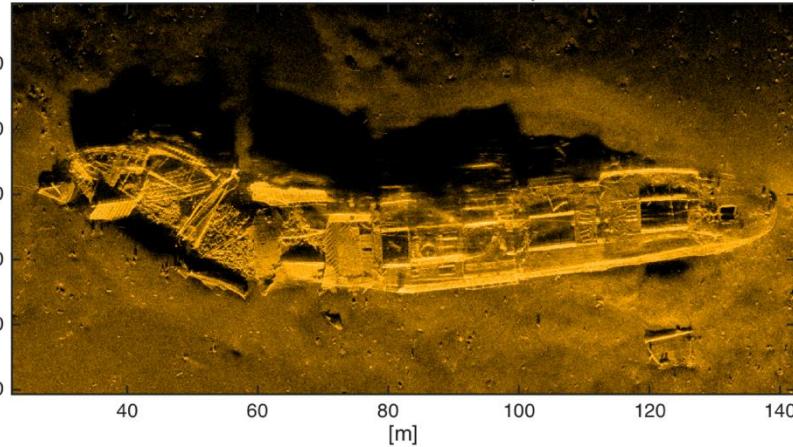
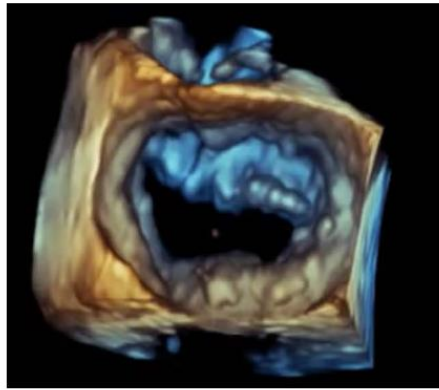
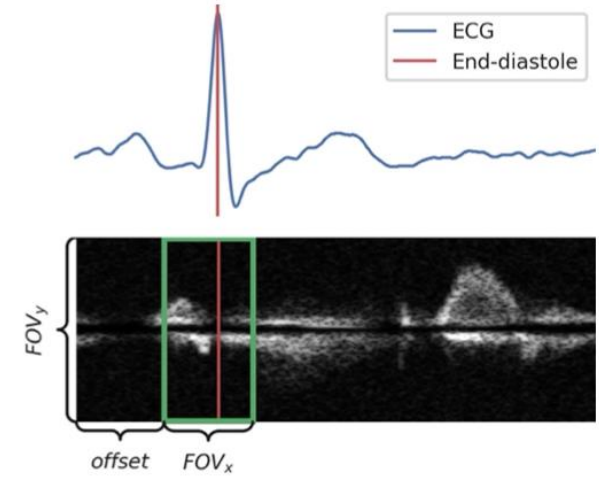
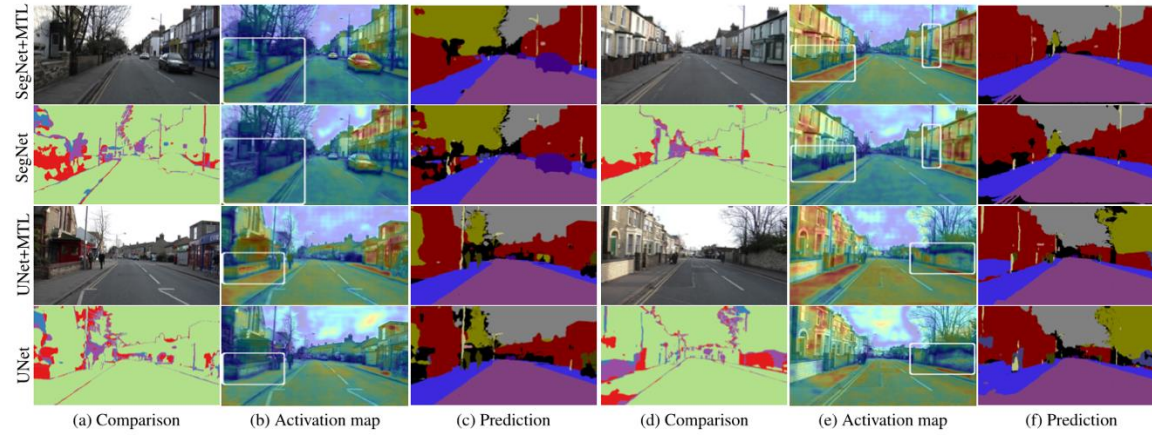


Sarina
(GEVU)

2) PRESENTATION ROUND, employees

- Name
- Research interests
- Teaching involvement
- ...

The Digital Signal Processing and Image Analysis research group (DSB)



(d) Case example 5: ALAX - Aberration correction

DSB group key research areas

- Signal processing & beamforming *e.g., algorithms to generate images from collected data*
- Deep learning & Image processing *e.g., algorithms to make sense of images*

Key applications

- Machine learning & Image analysis in, e.g., remote sensing & medical
- Medical ultrasound
- Sonar
- Infrasound & atmospheric probing

- **Don't miss the deadline for registration to teaching & exams!**
- **Study direction compositions:**
 - **ELITE** – Signal Processing and Imaging:
<https://www.uio.no/english/studies/programmes/electrical-engineering-master/programme-options/signal-processing/index.html>
 - **CS** – Imaging and Biomedical Computing:
<https://www.uio.no/english/studies/programmes/computational-science-master/structure/index.html>
 - **DS** – Digital Image Processing:
<https://www.uio.no/english/studies/programmes/datascience-master/structure/>

ELITE

Signal Processing and Imaging

Example 1

4. semester	Master's thesis	Master's thesis	Master's thesis
3. semester	Master's thesis	Master's thesis	Master's thesis
2. semester	Master's course	Master's course	Master's course
1. semester	Master's course	Master's course	Master's course
	10 ECTS credits	10 ECTS credits	10 ECTS credits

Example 2

4. semester	Master's thesis	Master's thesis	Master's thesis
3. semester	Master's course	Master's thesis	Master's thesis
2. semester	Master's course	Master's course	Master's thesis
1. semester	Master's course	Master's course	Master's course
	10 ECTS credits	10 ECTS credits	10 ECTS credits

- Mandatory:**
- IN4015 – Ultrasound Imaging
 - IN5340 – Statistical Signal Processing

CS

Imaging and Biomedical Computing

Example 1

4. semester	Master's thesis	Master's thesis	Master's thesis
3. semester	Master's thesis	Master's thesis	Master's thesis
2. semester	Master's course	Master's course	Master's course
1. semester	Master's course	Master's course	Master's course
	10 ECTS credits	10 ECTS credits	10 ECTS credits

Example 2

4. semester	Master's thesis	Master's thesis	Master's thesis
3. semester	Master's course	Master's thesis	Master's thesis
2. semester	Master's course	Master's course	Master's thesis
1. semester	Master's course	Master's course	Master's course
	10 ECTS credits	10 ECTS credits	10 ECTS credits

- Mandatory, 2 out of:**
- IN4200 – High-Performance Computing and Numerical Projects
 - FYS-STK4155 – Applied Data Analysis and Machine Learning
 - MAT4110 – Introduction to Numerical Analysis

DS

Digital Image Processing

Recommended plan with a master's thesis of 60 ECTS credits

4. semester	Master's thesis		
3. semester	Master's course / Master's thesis	Master's course / Master's thesis	Master's course / Master's thesis
2. semester	Master's course / Master's thesis	Master's course	Master's course
1. semester	Master's course	Master's course	Master's course
	10 ECTS credits	10 ECTS credits	10 ECTS credits

- Mandatory:**
- STK-IN4300 – Statistical Learning Methods in Data Science
 - IN-STK5000 – Adaptive methods for data-based decision making
- Recommended:**
- IN4310 – Deep learning for Image Analysis
 - IN5310 – Advanced Deep Learning for Image Analysis

Courses @DSB

Signal processing

Autumn

- [IN4190](#) Digital signal processing
- [IN4015](#) Ultrasound Imaging

Spring

- [IN5340](#) Statistical Signal Processing
- [IN5450](#) Array Signal Processing

Image analysis / ML

Autumn

- [IN3370](#) Digital image processing
- [IN3050](#) Introduction to Artificial Intelligence and Machine Learning
- [IN5310](#) Advanced Deep Learning for Image Analysis

Spring

- [IN4310](#) Deep Learning for Image Analysis

Additional courses, recommended

Autumn

- FYS4150 – Computational Physics
- FYS-STK4155 – Applied Data Analysis and Machine Learning
- TEK5020 – Pattern recognition

Spring

- IN4200 – High-Performance Computing and Numerical Projects
- STK4900 – Statistical Methods and Applications

Master's thesis (60 credits)

- **Our research group can offer weekly MSc sessions with free food!**
- Independent, scientific research
- Corresponds to 1 study year, completed by: written thesis, oral presentation & oral examination
- Opportunity to specialize in a chosen research topic
- Recommended course may vary depending on programme option, project, & supervisor

Deadline 1. December!

Study agreement, project description and research plan. For some this can be even ~early October!

- **ELITE students: writing course in early autumn, starting off an MSc project plan**
- **CS students: Essay as first part of MSc**

⇒ **Start looking for a supervisor and Master's thesis topic early!**

Database of project suggestions: <https://www.mn.uio.no/ifi/studier/masteroppgaver/dsb/>

⇒ **Separate open project presentation session will come in September!**

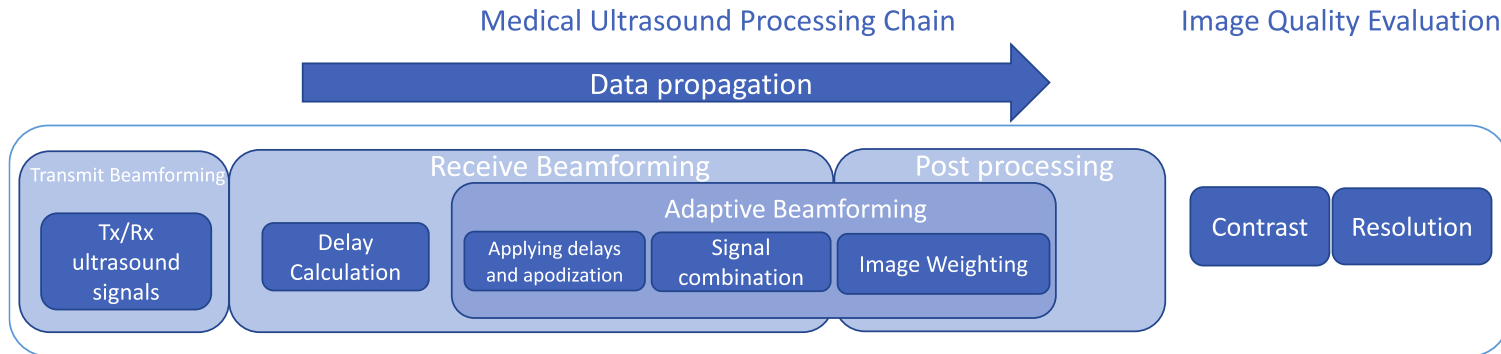
Will first have “dialogue phase” until end-September - later a “decision phase”

The Digital Signal Processing and Image Analysis research group (DSB)



Key objective

**Algorithms & methods
to make better images
and characterization**



Larger collaborations, DSB group (examples)

CIUS (Centre for Innovative Ultrasound Solutions) / **NxUs** (Next-generation Ultrasound Solutions)

- SFI hosted by NTNU
- NTNU / GE Vingmed / Kongsberg Maritime / FFI

Visual Intelligence SFI

- Hosted by UiT
- Deep learning applications across many imaging domains
- NR / UiT & GE Vingmed Ultrasound /...

Norwegian Centre for Knowledge-driven Machine Learning (INTEGRATE)

- Norwegian cross-institute project for more sustainable, accurate, trustworthy & ethical machine learning
- Kickoff this month

SUURPh

- Decoding Human Memory and Perception through Machine Intelligence
- Collaboration between University of California San Diego, UiO, SIMULA