



Arne H. Bechensteen

PhD student in signal processing

Nice, France

Profile

I am a PhD student specializing in sparse optimization and its application in image processing. Trilingual and with a multinational background, I am a fast learner striving to develop my knowledge in applied mathematics and computer science.

Experience

PhD- MORPHEME team at INRIA/I3S/iBV

10/2017-

Sophia Antipolis

PhD title: **Reconstruction for 3D TIRF-MA fluorescence microscopy imaging**

Signal / image processing & Sparse optimization

- Working on different methods to minimize the constrained $\ell_2\text{-}\ell_0$ minimization problem.
- Reconstruction of Single-Molecule localization microscopy images.

Internship- MORPHEME team at INRIA/I3S/iBV

03/2017-08/2017

Sophia Antipolis

Sparse optimization

- Working on a relaxation of the constrained $\ell_2\text{-}\ell_0$ minimization problem.

Internship- Technical university of Denmark

06/2016-08/2016

Copenhagen

Colour image processing

- Searching a new variational model that exploits correlation between channels in multispectral images. Testing the proposed model with the minimization algorithms PALM and ADMM.

Internship- Norwegian Defence Research establishment

06/2015-08/2015

Oslo

3D scanning

- Scanned projectile fragments using both a normal camera and a 3D scanner.
- Wrote a program that analyzed the geometric of the fragments to find the shape factor.

Internship- Norwegian Defence Research establishment

06/2014-08/2014

Oslo

High-speed video analysing

- Developed a program that analyzed video of test firings with a newly developed ammunition, finding the speed of each fragment as well as impact coordinate

Internship- Norwegian Defence Research establishment

06/2013-08/2013

Oslo

Radar frequency analysing

- Developed a program that analyzed radar frequencies used under difficult conditions

Publications

Arne Bechensteen and Laure Blanc-Féraud and Gilles Aubert. **New $\ell_2\text{-}\ell_0$ algorithm for single-molecule localization microscopy**. Biomedical Optics Express **11**(2) 2020

Arne Bechensteen and Laure Blanc-Féraud and Gilles Aubert. **Exact biconvex reformulation fo the $\ell_2\text{-}\ell_0$ minimization problem** GRETSI 2019

Arne Bechensteen and Laure Blanc-Féraud and Gilles Aubert. **New Methods for $\ell_2\text{-}\ell_0$ Minimization and their Applications to 2D Single-Molecule Localization Microscopy**. 2019 IEEE 16th International Symposium on Biomedical Imaging

Internal publication

Tallak H. Risdal, Arne H. Bechensteen. **High-speed video of APEX test firings: Results of data reduction to determine fragment velocities and direction**. Norwegian Defence Research establishment (FFI) report no: 14/01621. Confidential publication.

Details

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Education

INSA Toulouse

2012-2017

Mathematical and
modeling engineering

Exchange Student-
Universität Hamburg
2016-2017 (1 semester)

Modelling and
simulations of complex
systems

Teaching

Image processing
(Traitement Numérique
des Images) 5th year
Polytech Nice Sophia

Applied AI 5th year
Polytech Nice Sophia

**Advanced Machine
Learning** 5th year
Polytech Nice Sophia

Languages

Norwegian

English

French

Tools

MATLAB

Python