Morten **Engelsen**
(Né Rasmussen)

Research Software Engineer

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Bio

My passion lies in combining and applying multiple disciplines in order to tackle complex and diverse technical challenges. Over the last 15 years, I have used a mix of research and software engineering application to foster innovation for ultrasound imaging and medical image processing.

Most recently, I took time to create my own path by founding mofii io in order to scratch the creative itch I've had for years to develop and refine lingering ideas into possible products.

Before mofii io, I served as the Head of Software & Algorithms at the start-up Orchard Ultrasound Innovations. My role was to define and develop the critical path to the company's software and algorithms foundation and to lead novel applied physics data-processing research which was built upon my role as a Research Scientist at Stanford University.

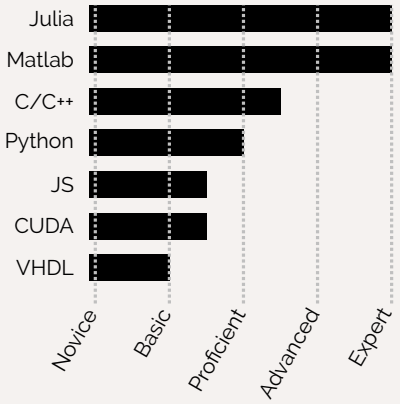
I like to think of myself as collaborative and adaptable. My energy comes from being able to solve what is most needed - whether it is to focus on a specific technical challenge, to build a bridge for effective communication between software and hardware engineers, or to be a champion to ensure that business operations have the context they need to build an enduring business.

Skills

ENGINEERING Signal & Image Processing, Beamforming, Acoustics, Physics simulations & modeling, Optimization.

LANGUAGES English, Danish, German.

SOFTWARE BY PROFICIENCY



Experience

2023 – 2024 (part time)
Founder, CEO — **mofii io, llc**
Innovating, testing and developing a range of concepts, such as a weightlifting tracker and a no-bypass coffee brewer.
`Rust / Julia / Laser Cutting / 3D Printing`

2019 – 2023
Head of Software & Algorithms, Principal Engineer — **Orchard Ultrasound Innovation, LLC**
While at OUI they were focused on two key products: an acoustic fingerprint sensor that is robust against water and dirt, and a medical device that can act as a knife utilizing HIFU (acoustics) to kill tissue inside the body without cutting or causing bleeding.

Inaugural engineer and a founding team member. Focused on partnering with the rest of the founding team to establish the company's technical foundation and strategic direction. Served as the liaison between the hardware and software teams, ensuring effective interdisciplinary collaboration. Key contributions include:

Software Development Leadership Led all stages of software development, including planning, designing, building, testing, deploying, and DevOps implementation.

Nonlinear Signal Processing Spearheaded a groundbreaking project utilizing advanced applied physics to develop an industry-first feature in medical ultrasound.

Strategic Project Management Directed timelines, resource allocation, and execution for software projects, ensuring delivery aligned with organizational goals and technical requirements.

Innovative Software Solutions Designed and implemented internal GUIs (full-stack) for proof-of-concept testing, in-house hardware evaluation, and investor demonstrations, as well as remote control and automatic testing software for lab equipment.

`Julia / DevOps / Python / JS / React`

2015 – 2019
Research Scientist — **Stanford University**
Conducted research within the Khuri-Yakub Group, part of the E. L. Ginzton Laboratory, on a diverse range of ultrasound-related projects. These included acoustic neurostimulation, retinal ultrasound stimulation (aimed at restoring vision for the blind), full gastrointestinal ultrasound scanning via pill-cam, combined 3D HIFU and imaging, and photoacoustics. Designed and implemented a real-time, parallel-processing solution for medical ultrasound imaging utilizing MATLAB, C, and CUDA. Developed a real-time processing system for ultrasound fingerprint scanning using Python, MATLAB, and Julia. Authored seven patents, several of which laid the foundation for the start-up Orchard Ultrasound Innovations. Co-supervised Stanford PhD candidates and applied for research grants to support ongoing work in the group.
`Matlab / C / CUDA / Python / Julia`

2010 – 2011 (part time)
CTO — **Biledbutikken ApS**
Oversaw all technical operations at Billedbutikken, Northern Europe's largest photo printing and personalized merchandise service, including managing the design team, coordinating with overseas programming teams, managing web and NAS servers, setting up network infrastructure, and driving cybersecurity initiatives.
`PHP / JS / Linux Admin / DevOps / Cyber Security`

2002 – 2004
Sergeant — **Danish Army**
Led and motivated a diverse team of soldiers from varying backgrounds and skill levels, gaining valuable leadership skills tested and refined in practice. Conducted lectures for groups of up to 100 soldiers, developing strong presentation skills.
`Leadership / Applied Motivational Skills`

Education

2011 – 2014
PhD — **Technical University of Denmark**
Thesis: 3D Synthetic Aperture Imaging and Row-column Addressing of 2D Transducer Arrays

Specialized in advanced ultrasound imaging, including beamforming, image processing, and applied mathematics. Developed a novel ultrasound processing algorithm and invented a unique transducer design that significantly improved data measurement quality. Secured a groundbreaking patent, recognized as the university's most financially successful in 2014.

2008 – 2011
M.Sc. in EE with Space Technology Specialization — **Technical University of Denmark**
Thesis: 3D Ultrasound Imaging

Specialized in medical ultrasound imaging and both linear and non-linear signal and image processing. My master's thesis centered on reverse engineering a medical ultrasound matrix probe and developing a high-quality 3D ultrasound imaging algorithm. This project used advanced computational techniques to enhance image quality in ultrasound imaging.

2004 – 2008
B.Sc in EE — **Technical University of Denmark & TU Berlin**
Thesis: Control Software for the BeeSat Power Control and Distribution Unit.

Focused on both theoretical and practical applications, with coursework including computer vision (OpenCV), parallel computing (OpenCL, CUDA), control theory, analog and digital electronics, statistics, VHDL for FPGA programming, PCB design and fabrication, and microcontroller programming.

For the bachelor thesis, developed all software for the power control unit of the CubeSat "BeeSat," launched into orbit with the developed code running on board. This code was later adopted by TU Berlin for satellite programming instruction.