

# JEPPE HINRICHS

Copenhagen, Denmark

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## 🧰 Employment History

- 2024 – now      **Electrical Engineer**, Research & Development, Sensata Technologies
- 2021 – 2023      **Graduate Researcher**, Brain/Biomedical Microsystems Laboratory
- 2015 – 2017      **Electrical Engineer**, Development & Engineering, Welltec
- 2014 – 2015      **Intern**, Development & Engineering, Welltec

## 🎓 Education

- 2021 – 2023      **Master of Science in Electrical Engineering**, Korea Advanced Institute of Science & Technology
- 2021 – 2023      **Master of Science in Electrical Engineering**, Technical University of Denmark
- 2020      **Research Student (Exchange)**, Tokyo Institute of Technology
- 2018 – 2020      **Bachelor of Electrical Engineering**, Technical University of Denmark
- 2013 – 2015      **Associate in IT-Technology**, Aarhus Business Academy

## ☰ Selected Projects

- 2023      **Master Thesis** | LTspice, Altium Designer, MATLAB, Xilinx Vivado, Jupyter
- Title: *Portable ultrasound system for blood velocity estimation*
  - Designed system architecture and state machine of Doppler ultrasound imaging device
  - Implemented Zynq 7000 FPGA bitstream for ultrasound pulser control system
  - Implemented MCU/FPGA interconnects, registers and flags and conducted signal propagation analysis
- 2023      **A wearable pH sensor based on a flexible charge-coupled device** | Nanofabrication
- pH sensor exceeded Nernst limit by accumulating charges
  - Flexible Schottky-junction control CCD-based
  - Wearable sensor with  $\Delta V > 2.5V$  over pH range
- 2022      **Biomedical MEMS and Electrical Engineering** | MATLAB, Simulink, Coventorware
- Title: *Characterizing a Hydraulic Displacement Amplifier for a Piezoelectric Microvalve*
  - Simulation and characterization of piezo-electric actuator platform for microfluidic valve applications
  - Fabrication of MEMS device for validation
  - Achieved high-frequency (1 kHz), high-pressure (300 kPa) and large stroke targets (30  $\mu m$ )
  - Estimated flow rate at  $0.21 mLs^{-1}$  with a 1 kHz driving voltage of 500 V peak-to-peak
- 2021      **Fabrication of Dopamine Sensor** | COMSOL Multiphysics, Nanofabrication, Photolithography
- Design and simulation of dopamine sensor using simulation software
  - Fabricated sensor from ground-up in a cleanroom environment
  - Using state-of-the-art fabrication machines to validate process and wafer yields
- 2020      **High-Speed Convolutional Neural Network Accelerator** | Xilinx Vivado, Jupyter
- Conducted study into training models for machine vision
  - Achieved highly parallelized accelerator that maximizes computational and resource efficiency
  - Implementation of low-resolution CNN inference was 17x in comparison with a baseline

## ★ Skills

- Languages      🗣️ Danish, English, German, Japanese, Korean
- Coding      💻 C/C++, Python, Bash, LabVIEW, Assembly, Make
- CAE/CAD      ⚙️ Altium Designer, KiCAD, OrCAD, LTspice, Qspice, Simulink, Fusion 360
- Technologies      ➤ Linux, Git, RTOS, Xilinx Vivado, MATLAB, NI-DAQ
- Misc.      👤 Academic research, teaching, training, microcontrollers, computer hardware, exercise, music

## 🏆 Miscellaneous Experience

- 2023      🏆 **Scholarship Award**, from Siemens Foundation for research project funding at KAIST in South Korea
- 2020      🏆 **Scholarship Award**, from Scandinavia-Sasakawa Foundation for research project at Tokyo Institute of Technology in Japan