Janus Bo Andersen

Danish/EU citizen. Relocated back to Copenhagen/Malmö area in August 2023.

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EMbedded Electronics Engineer Profile

* In my career, I have enjoyed working in both start-ups and corporates, small and large teams, sometimes taking leadership roles, coordinating and communicating with a multitude of stakeholders and seeing projects from the requirements stage through test and deployment.
* Going on 10+ years experience with developing software and 1-2 years with embedded electronics.
* Initially built quantitative finance and risk management solutions, analytics and productivity software.
* Upskilled to work on embedded electronics. Have since developed computer vision, signal processing and robotics applications on microcontrollers, FPGA and SoC platforms. Have also enjoyed hands-on with custom electronics, designing, assembling and testing PCBAs for power, RF and analog applications at a quantum start-up.
* Worked on a personal ‘start-up’ product (related to logic synthesis for FPGAs and VLSI) from mid-’22 to ‘23. Parked it indefinitely to prioritize our relocation, and because I miss having great colleagues to collaborate with.
* My career began with an MSc in quantitative finance, and I later added a BEng in Electronics to upskill to understand electronics, device physics and hardware architecture. Enrolled in a *part-time* 4-year MSc Electronics Engineering degree from Aug. 2023 to continue that journey while working and solving real problems *full-time*.

Education

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| **Industry M.Sc. Electrical Engineering** | Technical University of Denmark (DTU), Denmark | Aug. 2023 – |

The Industry Master of Science in Engineering (EE.), combines *full-time work* with studies over a 4-year period.

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| **B.Eng. Electronics (Embedded Systems)** | Aarhus University, Denmark | 2018 – 2022 |

Top of the year with GPA 11.9 (12-point scale). Elected to education committee.

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| **M.Sc. Finance** | Aarhus University, Denmark | 2007 – 2009 |

Top of the year with GPA 11.5 (12-point scale). Selected for Boston Consulting Group’s international case competition.

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| **B.Sc. Economics and Business** | Aarhus University, Denmark | 2004 – 2007 |

Top of the year with GPA 10.6 (previous Danish grading scale). Exchange at Singapore Management University. Received McKinsey Award First Prize for best B.Sc. result.

Selected Professional experience

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| **Electronics Engineering applied to Quantum Sensing (deep tech internship)** | 2022/2 – 2022/7 |

Atomionics, Singapore

* Developed high-performance PCBAs used in state-of-the-art quantum sensing product (cold atom interferometry), in close collaboration with Physics and Mechanical Engineering teams.
* Evaluated electronics platforms and software for experiment control, data acquisition, RTOS and GUI libraries (C/C++).

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| **Prototype R&D engineering project** | 2021/8 – 2022/1 |

Bang & Olufsen, Denmark

* Greenfield prototype robotics and vision system to automate UI testing of touch-based products.
* Implemented (a) control algorithms to physically interact with physical UI on devices under test using a 6-DOF robot and (b) computer vision algorithms to perform real-time video analysis and verification of visual UI feedback.

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| **Systems Developer** | 2021/3 – 2021/7 |

TransAsia Private Capital, Singapore

* Ownership of legacy code base of in-house trading and portfolio management system during period leading up to the replacement with a commercial solution. Set up new data pipelines and risk/analytics dashboards.

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| **Applied Machine Learning and Computer Vision Intern (deep tech internship)** | 2021/1 – 2021/3 |

Seventh Sense AI, Singapore

* Projects in facial recognition using deep learning: Supported optimization of logic for real-time FR, implemented GUI for AR. Prepared provisioning for deployment to custom CPU-based devices. Bring-up of Xilinx MPSoC FPGA dev platform.

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| **Freelance/Consultant Developer** | 2016 – 2017 |

Sold to Novo Nordisk A/S and a smaller, derived version deployed with a private management consulting network

* Developed desktop productivity tool (visual communications). Rolled out to 2,000++ employees globally, in use today.

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| **Head of Finance, Legal, Logistics & IT** | 2014 – 2016 |

Novo Nordisk Pharmaceuticals (Philippines) Inc., Philippines

* Successful turn-around project in affiliate with new team, e.g. driving operating profit CAGR of 20.9% over two years, versus -2.5% CAGR in two years prior, contributed to sales CAGR of 23.7% over two years vs. 4.1% two years prior, growing affiliate from less than 60 FTEs in early ’14 to more than 100 in ’16.
* Led department of 10 local employees, building team up from 3. Attracted 3 international employees on EBTs and longer rotations. Selection of projects delivered with team: New office, car program, internal control program, invoice capture system, inventory management reducing stock-outs.

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| **Financial Risk Manager** | 2011 – 2014 |

Novo Nordisk A/S, Corporate Treasury, Denmark

* Developed quantitative multi-currency hedging and risk mgmt. system with strategy and audit inputs from McKinsey and PwC during 2012-13. System yielded stronger risk insights and decision support due to the impacts of currency volatility, correlations and cash flow uncertainty on net financials and operating profit.
* Drove hedging of major currencies during 2013-2014, with a total position in OTC forwards and options equivalent to about USD 5 billion nominal (8-14 months horizon), as well as capital structure actions during 2011-2013, e.g. buybacks of DKK 14 billion (USD 2.3 billion) in 2013.

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| **Global Finance Graduate** | 2009 – 2011 |

Novo Nordisk, Denmark, India, China

* 2-year international finance talent programme with project rotations in Denmark, India (Bangalore) and China (Beijing).

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| **Quantitative Analyst** | 2007 – 2009 |

Jyske Bank A/S, Quantitative Research, Denmark

* Developed, implemented and tested credit risk models on the bank's loan portfolio, with focus on PD and EAD, and introduced use of a robust estimation method and non-parametric statistics.

Selected Larger tech projects

* High-performance PCBAs used for quantum sensing; RF design for 6.8 GHz signal chain on RO4350B high-speed laminate for Analog Devices SSB IQ mixer and RF switches, high-current DC-DC power modules implementing SynQor MIL-COTS converters, photodetectors with transimpedance amplifiers, controller boards implementing PID and sample & hold (mixed-signal design). *[For Atomionics Pte. Ltd. Not in the public domain. Contact me for details or references.]*
* Automated robotics and computer vision system for testing user-interfaces of high-end audio products. *[For Bang & Olufsen A/S. Not in the public domain. Contact me for details or references.]*
* IOT/Smart industrial energy metering with wireless M-Bus communication, using on-premises gateways and Cloud backend. *[For Remoni A/S. Not in the public domain, except the WM-Bus driver* [*here*](https://github.com/wmbusmeters/wmbusmeters/blob/master/src/driver_omnipower.cc)*. Contact me for details.]*
* Development of in-house multi-currency forex risk mgmt. system deployed in Treasury of multinational corporate. *[For Novo Nordisk A/S. Not in the public domain. Contact me for details.]*
* Desktop productivity software rolled out to 2,000+ employees globally at industry-leading pharma company. *[Sold to Novo Nordisk A/S. Not in the public domain. Demo screens from a smaller, derived project are available* [*here*](https://github.com/janusboandersen/slidesright)*.]*
* Computer vision pipeline for 3D scene reconstruction and image depth-segmentation using multiple views. *[Advanced Digital Signal Processing self-driven project, available* [*here*](https://github.com/janusboandersen/3d-computer-vision)*.]*
* Hardware accelerated ML inference on SoC/FPGA edge devices, processing vision data faster, with lower power. *[Advanced Digital Design self-driven project, available* [*here*](https://github.com/janusboandersen/machine-learning-on-soc)*.]*
* DSP algorithms indicating heart arrhythmias and measuring heart rate variability (HRV) using 12-lead ECG data. *[Digital Signal Processing self-driven project, available in Danish* [*here*](https://github.com/janusboandersen/dsp/blob/master/1.4-ecg-and-hrr/miniprojekt_4.pdf)*.]*
* Quadrotor drone dynamic control system development. *[Dynamic Systems self-driven project, available* [*here*](https://github.com/janusboandersen/dynamic-control-systems/blob/master/e4dse_jba_final.pdf)*.]*
* Lab equipment-as-a-service, deploying dockerized backend using Django, responsive frontend and IoT connection using MQTT. *[1 year project at Aarhus University.]*

Technical skills

**Languages:** Danish (native) · English (fluent) · German (business: B2/C1) · Swedish (conversational) · Mandarin (basic).

**Software development:**  Python 3 (7+ years), C (6+ years), C++11/14/17 (4+ years), Matlab (3 years), Bash/sh, VBA.

**Machine learning and analytics:** Keras/Tensorflow, Scikit-learn, Pandas, NumPy, SciPy, Matplotlib.

**Computer vision:** OpenCV (Python/C++) · Image Processing Toolbox/Matlab, Computer Vision Toolbox/Matlab.

**Test systems:** PyTest · GoogleTest (C++).

**Build, version control and DevOps:** CMake 3.x, Make · Git, Github · Docker, Docker-compose · Jira.

**Embedded MCU platforms:** FreeRTOS, Zephyr (RTOS) · Arm CMSIS (BSP/HAL) · Arm Cortex-M0+, Cortex-A8 · TI C5535 DSP.

**Embedded SoC/FPGA platforms:** Xilinx Zynq-7000 SoC, Artix-7 FPGA.

**EDA tools:** KiCAD 6 (schematic, PCB layout) · SPICE (simulation) · Xilinx Vivado/Vitis, SDK, SDSoC (synthesis) · VHDL, C++HLS.

**Linux and cloud:** Oracle Linux 7, CentOS 7, Ubuntu 18.04, 20.04 · AWS (EC2, S3, CloudFront).

**Digital signal processing:** DSP/Matlab, Filter Designer/Matlab.

**Networking and communication protocols:** MQTT, Sockets, TCP/IP · CAN, I2C, SPI, UART.

**Web technologies:** Django, Flask · Nginx · HTML5, CSS, Bootstrap 4.

**Databases:** Raw SQL query design and ORM · PostgreSQL, MongoDB.

**Other:** SolidWorks · MS Office, Access · SAS BASE, STAT, IML, SQL · SAP FI/CO, BW · Control System/Matlab · Simulink.