

Igor Krawczuk

✉ igor.krawczuk@tum.de
🌐 www.krawczuk.eu

Education

- Aug. 2014 – **M.Sc. Electrical and Computer Engineering**, TU Munich, Munich, Germany,
Feb. 2017 Focus: Artificial Intelligence & Neuromorphic Systems, Robotics.
Masters Thesis: **Modelling and Design of Hybrid CMOS-Memristive Neuromorphic Systems for STDP Implementations**, Grade of Thesis: TBD, Current Avg. 1.6
- Aug. 2015 – **Erasmus Exchange**, École polytechnique fédérale de Lausanne,
Nov. 2016 Lausanne, Switzerland.
I spent over a year in Switzerland, amongst other things writing my Masters Thesis and learning French
- Sep. 2011– **B.Sc. Electrical and Computer Engineering**, TU Munich, Munich, Germany,
Aug. 2014 Focus: Embedded Systems & Robotics.
Bachelors Thesis: **High Performance Low Latency Sensor Readout on a Tabletop Robot**, Grade of Thesis: 1.3, Final Grade: 2.7
- Sep. 2002 – **German Abitur**, Gymnasium Roth, Roth, Germany, Majors: Mathematics, English.
May 2011 Final Project **RSA - History and sample Implementation**, Grade of Final Project: 2.0, Final Grade: 2.0

Experience

Professional

- Apr. 2014 – **Freelance Software Engineer**.
today Designed and implemented a range of projects, from Embedded System Firmware(C) over custom crawler, ETL and classification stacks(Python) to automated lead tracking using NLP (Python) and more
- Nov. 2015– **Laboratory Assistant**, EPFL, Lausanne.
May. 2015 Characterized Metal-Oxide Memristors using Agilent ATP
- Sep. 2015– **Teaching Assistant**, EPFL, Lausanne.
Dec. 2015 Guided and supported students through VHDL implementations of Multi-Core CPUs

University Projects & Research

- February **Test and Characterization Automation**.
2016 - today Developed an open source Python3 library in order to automate a testing and characterization procedure. Development is ongoing
- January 2016 **Neuromorphic Stereovision Benchmarks**.
Implemented a novel depth detection algorithm on different platforms (x86 using concurrent Rust, SpiNNaker using C/Python) and presented Poster with comparison on HBP Educational Conference
- Sep 2015–Jan **VHDL and FPGA IC Design**.
2016 As part of a Project Lab, implemented an 8-bit ALU (Full Custom Digital Flow), a multiplier (Semi custom Digital Flow) and a Full Adder (Full custom Analog Design Flow) using amongst other tools Modelsim and Cadence

Feb 2015 – **Cognitive Robotics.**

July 2015 As part of a Project Lab, we programmed a NAO robot to play "Hot or Cold" with us, using ROS, OpenCV and Prolog for semantic reasoning

Technical and Personal skills

Software Engineering:

I have experience setting up Continuous Integration and Git infrastructure (*Gitlab*, *Docker*) and have coordinated teams using Agile collaboration styles before. I am familiar with most important Data Structures and Algorithms.

Programming Languages:

- *Experienced in:* C/C++ (7 years), Python(4 years), Rust(1 year), MatLab(3 years)
Actively practised. In each language I have written projects spanning thousands of lines of high quality code. I can reason over and explain language internals
- *Familiar with:* VHDL, Verilog, OpenModelica, Elixir, R, Elm, Java, C#
With some research, I can write professional level code. I can understand the basic internal model.
- *Basic or historic ability:* Assembler, Ruby, JavaScript, Haskell, OCaml, F#, Clojure
I have used these before, but it has either been long, or I am not up to my standards yet. However, I will quickly pick them up if required.

Electrical Engineering:

- **Machine Learning, AI & Data Science, Neuromorphic Engineering** My focus during my Master. Knowledge of State of the Art
- **Robotics, Embedded Systems, Control Theory** Focus during Bachelor, Knowledge of current techniques.
- **IC Design - Analog and Digital** Focus during Erasmus Exchange year, basic familiarity.

Industry Software Skills:

- *Proficient in:* vim, Most MS Office products, Various IDEs, Linux Server Administration
- *Familiar with:* Cadence, ModelSim, LTspice

General:

I communicate clear, integrate well into teams and value good documentation, long term thinking and adaptivity to changing requirements.

Languages:

Fluent in German and English, Confident in French, Basic Knowledge in Polish and Norwegian

Interests and extra-curricular activity

- I have been involved in a number of pre-Seed startups, mainly as technical consultant or as technical co-founder. These include BioCloud, a medical computer vision startup which grew out of our HackZurich2014 project, BayesMill a platform for automation of investment research and MedServ, a Fintech Startup looking to make biometric insurances easier.
- I was also part of the Students association at TUM from 2012 till 2015, primarily as treasurer, students representative on the faculty council and web developer. We provided essential services like lecture notes (where I was responsible for auditing and bookkeeping with a yearly revenue of over 150000 €) and fair treatment for the students.
- I was one of the first members of the students initiative *Roboy*, which rebuilds an humanoid robot every year, where I set up the collaboration infrastructure
- Other interests include, parkour and gymnastics, attending hackathons, writing and the guitar