

Daniel Bin Schmid

RESEARCHER · COMPUTER SCIENTIST

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Education

M.Sc. Informatics

TECHNICAL UNIVERSITY OF MUNICH (TUM)

Current GPA: **1,3** / 1,0

Okt. 2022 - Present

- SPECIALISATION: Machine Learning and Analytics; SIDE SPECIALISATIONS: Databases and Information Systems, Robotics
- RESEARCH: Causality and Deep Learning (DL), DL Theory, Hardware Acceleration for DL

B.Sc. Media Informatics

UNIVERSITY OF STUTTGART

GPA: **1,9** / 1,0

Okt. 2018 - Aug. 2022

- Focuses: Brain-Computer-Interfaces, Computer Vision, Human-Computer-Interaction

Highlighted Projects

Causal Machine Learning: Generative AI & Causal Prediction

w/ **TUM Camp & Torr Vision Group**

10/23 - 03/24 | [PROJECT LINK](#) | TUM-DI-LAB RESEARCH PROJECT IN COLLABORATION W/ UNIVERSITY OF OXFORD

Lennart Bastian, Dr. Ashkan Khakzar

- In a group of four selected students, we **identified own research directions**.
- Developed **own method** for generating images with a causal mechanism by bringing together a causal VAE and a diffusion model (DDPM).
- Investigated causally-inspired methods for more robust & explainable x-ray pathology classification.

Reinforcement Learning (RL) for Quadcopter Control

w/ **AIR, TUM**

10/23 - 04/24 | [GITHUB.COM/DANIELBINSCHMID/RL-PYBULLETS-CF](#) | PRACTICAL

Finn Suberkrüb, Prof. Berthold Bäuml

- Software development of full pipeline for drones, from state estimation to low-level control. Experimentation with RL from drone racing.

Brain-Computer-Interfaces: On-Device Training

w/ **STAR, Uni Stuttgart**

01/22 - 09/22 | [GITHUB.COM/DANIELBINSCHMID/PORTABLE-BCI](#) | BACHELOR'S THESIS AT UNIVERSITY OF STUTTGART

Dr. Paul Genssler, Prof. Hussam Amrouch

- Implemented machine learning **training on a resource-constrained Smartwatch** for preserving data privacy.
- Deployed deep transfer learning with EEGNet (a CNN for EEG processing) on own brain-waves.
- Developed **own methods** for online learning with Hyperdimensional Computing (HDC).

Project Collection

SEE GITHUB AND PORTFOLIO FOR DETAILS.

- 04/23 - 04/24: Researching **theoretical foundations of deep learning** with chair of TUM TFAI with special interest in Transformers.
- 10/22 - 02/23: Serverless distributed data processing on Microsoft Azure. [GITHUB LINK](#).
- 10/22 - 02/23: Handgesture recognition demo for the Tech Challenge at UnternehmerTUM. [GITHUB LINK](#).
- 10/21 - 02/22: Saliency map prediction on graphic designs with the excellent team of **PERCEPTUAL UI**.
- 04/21 - 09/22: Brain-inspired computing python framework to facilitate research on HDC.

Work Experience

Research Assistant for Transformer Acceleration

Munich, Germany

TUM CHAIR OF AI PROCESSOR DESIGN (AI-PRO)

Apr 2023 - Apr 2024

- **Leading small research team** of three students; Co-advising two B.Sc. students on their thesis.
- Identifying research questions in interactive sessions with advisor Prof. Amrouch (amrouch@tum.de).
- Exploiting sparsity; Fine-tuning; Quantization; RISC-V ISA design with Chipyard & Synopsys; C code for Transformers

MLOps Engineer

Munich, Germany

MAURER ELECTRONICS GMBH

Feb 2023 - Jul 2023

- Integration of ML model inference into existing C++ Computer Vision software. Model versioning and pipeline automation.

Teaching Assistant for Theoretical Computer Science

Stuttgart, Germany

FORMAL METHODS OF INFORMATICS, UNIVERSITY OF STUTTGART

Okt 2020 - Feb 2021

- Teaching 46 students in bi-weekly sessions, grading homeworks and granting exam permissions

Skills

Programming Languages

Python • C • C++ • Java • Chisel • Julia • Shell • SQL • C# • Verilog • Assembly • ~~Fortran~~ • NodeJS

Tools & Frameworks

PyTorch • TensorFlow • ROS2 • Chipyard • Docker • Microsoft Azure • AWS • Matlab • Linux • Git

Languages

German (native) • English (C1)