

ZhaolanHuang

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Professional Experience

Freie Universität Berlin

Research Assistant

Berlin, Germany

01/2023 – Present

- Developed a Rust-based TinyML framework featuring multi-core scheduling on MCUs (Ariel-ML).
- Developed a new CNN fusion technique for MCUs, achieve inference using 50 % less RAM (msf-CNN).
- Designed a TinyML pipeline to record, recognize and store specific bird songs, extending sensor life-time from 2 to 18 weeks (TinyChirp).
- Extended U-TOE to support secure CI/CD of ML models on low-power devices (RIOT-ML).
- Developed a TinyML benchmark toolkit featuring RIOT OS support (U-TOE).

MedRhein GmbH

Product Manager & SAP Consultant (part-time)

Berlin, Germany

11/2021 – 12/2022

- Lead and coordinated the implementation of SAP Business One.
- Designed prototypes of internal tools for ERP system and website.

Guangdong University of Technology

Embedded Systems Engineer (freelancer)

Guangzhou, China

10/2014 – 08/2018

- Software Development for Bedside Multiparameter Monitor and Anesthesia Monitor
- Developed Cardiopulmonary resuscitation (CPR) Training System

Education

Freie Universität Berlin

PhD Student in Computer Science

Berlin, Germany

01/2023 – Present

Topics: Machine Learning System; Model Optimization and CI/CD on Resource-Constrained Devices.

Technische Universität Darmstadt

M.Sc. Electrical Engineering and Information Technology (Automatic Systems)

Darmstadt, Germany

10/2019–11/2021

Thesis: "Pattern Recognition in the Capacitive Electrocardiogram and Reconstruction of the Reference Electrocardiogram"

Guangdong University of Technology

B.Eng. Automation

Guangzhou, China

09/2013–07/2017

Publications

- Z. Huang and E. Baccelli. msf-CNN: Patch-based Multi-Stage Fusion with Convolutional Neural Networks for TinyML. in Proc. of the 39th Conference on Neural Information Processing Systems.
- Zhaolan Huang et al., TinyChirp: Bird Song Recognition Using TinyML Models on Low-power Wireless Acoustic Sensors, in Proc. of the IEEE International Symposium on the Internet of Sounds, Sept. 2024.
- Z. Huang, K. Zandberg, K. Schleiser, E. Baccelli. (2024). RIOT-ML: toolkit for over-the-air secure updates and performance evaluation of TinyML models. Annals of Telecommunications, 1-15.
- Z. Huang, K. Zandberg, K. Schleiser, E. Baccelli. U-TOE: Universal TinyML On-board Evaluation Toolkit for Low-Power IoT. In Proc. of 12th IFIP/IEEE PEMWN, Sept. 2023.

For further publications please see [google scholar](#).

Technical Skills

Programming: C/C++, Rust, Python, C#, Matlab, Qt

MLSys: IREE, LLVM & MLIR, TVM, Tensorflow, Pytorch

Languages

English: Professional working proficiency

German: C1, Professional working proficiency

Chinese: Native