Tien Van Nguyen

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Personal Profile

A software system engineer expertised in digital signal processing and machine learning for mobile and low-power platforms. More details on my previous works can be found here.

Work Experience

Qualcomm Technologies — *Cork, Ireland*

System Engineer - Sensors — *May 2024 - Current*

- Develop sensor-based solutions with machine learning and signal processing.

Programming Languages: C, C++, Python, Matlab.
Tools and Libraries: Qualcomm AI Hub, Qualcomm® AI Engine Direct.

Vietnam—Korea Institute of Science and Technology — *Hanoi, Vietnam*

Research Engineer — *Aug 2021 - Apr 2022*

- Developed systems and software for robotic platforms.
- Collaborated in a cross-disciplinary environment.

Programming Languages: C, C++, Python.
Tools and Libraries: Robot Operating System (ROS), Qt.

Viettel High Technology Industries Corporation — *Hanoi, Vietnam*

Software Engineer - Embedded — *Nov 2020 - Aug 2021*

- Developed drivers and board bring-up for Linux embedded devices.

Programming Languages: C.

Education

University College Cork — *Cork, Ireland*

Masters by Research - Electrical and Electronics Engineering — *May 2022 - May 2024*

- Graduated with First Class Honours.
- Thesis titled *"Low-Power Real-Time Seizure Monitoring via AI-Assisted Sonification of Neonatal EEG"*.
- Full time research student at Embedded Systems@UCC Group.
- Studied and published peer-reviewed journals on signal-processing, edge machine learning, and low-power biomedical systems.

Hanoi University of Science and Technology — *Hanoi, Vietnam*

Engineer - Control Engineering and Automation — *Oct 2015 - Aug 2020*

- Minored in Instrumentation and Industrial Informatics.
- Graduated with GPA 3.37/4.0 and ranked 9th/155.
- Exchange studied at Technical University of Munich, Munich, Germany with ERASMUS+ Scholarship Winter Term 2019/20.

Publications

[1] Low-Power Real-Time Seizure Monitoring Using AI-Assisted Sonification of Neonatal EEG
Tien Nguyen, Aengus Daly, Sergi Gomez-Quintana, Feargal O'Sullivan, Andriy Temko, Emanuel Popovici
IEEE Transactions on Emerging Topics in Computing, vol. 13, no. 1 pp. 80–89, 2025, DOI: 10.1109/TETC.2024.3481035

[2] A real-time and ultra-low power implementation of an AI-assisted sonification algorithm for neonatal EEG
Tien Van Nguyen, Aengus Daly, Feargal O'Sullivan, Sergi Gomez Quintana, Andriy Temko, Emanuel Popovici
2023 9th International Workshop on Advances in Sensors and Interfaces (IWASI) 2023, DOI: 10.1109/IWASI58316.2023.10164463

Projects

Low-Power Real-Time Seizure Monitoring via AI-Assisted Sonification of Neonatal EEG *Cork, Ireland*

University College Cork *May 2022 - Dec 2023*

- Designed a real-time AI-assisted sonification algorithm for seizure detection in newborns.
- Implemented the algorithm as a multi-threaded system on an AI microcontroller.
- Developed, quantized, and deployed neural networks on low-power accelerator.

Programming Languages: C, C++, Python, Matlab.
Tools and Libraries: CMSIS DSP, FreeRTOS, Analog Devices AI.

Skills

Programming C, C++, Python, Matlab.

Tools & Frameworks

- **Digital Signal Processing**: Numpy, SciPy, Librosa, etc., Matlab, CMSIS DSP
- **Real-Time Programming**: FreeRTOS, Boost C++, C++ Standard
- **Machine Learning**: PyTorch, Tensorflow, Qualcomm AI Hub, Qualcomm® AI Engine Direct, Analog Devices AI, TensorFlow Lite

Technical Concepts

- **Signal Processing**: FFT, Wavelet, STFT, FIR/IIR filters
- **State Estimation**: Kalman Filters, Extended Kalman Filter
- **Machine Learning**: Transformers, Attention Mechanisms
- **Bayesian Methods**: Nonparametric Bayesian
- **Time-Series Analysis**: Hidden Markov Models

References

Dr. Emanuel Popovici
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