

M IHSAN AL HAFIZ

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RESEARCH & PROJECT EXPERIENCES

(EU-Project) Explainable Trustworthy AI for Data Intensive Applications (EXTRA-BRAIN)

KTH Royal Institute of Technology (PhD)

April 2024 – Present Stockholm

- The project is a part of my PhD project. I am developing a neuromorphic hardware accelerator and implementing it in an FPGA

Visual-Inertial Localization implementation on FPGA

Atlas Copco & KTH Royal Institute of Technology (Master thesis)

Jan 2023- June 2023 Stockholm

- Developed Kalman Filter IP core and implemented together with an AI model with a Deep-Learning Processor Unit IP core. Utilized Vitis AI to compile the AI model. Implemented in Zynq™ UltraScale+™ MPSoC FPGA.

LIST OF PUBLICATIONS

A Reconfigurable Stream-Based FPGA Accelerator for Bayesian Confidence Propagation Neural Networks

Muhammad Ihsan Al Hafiz, Naresh Ravichandran, Anders Lansner, Pawel Herman, and Artur Podobas

2025

Applied Reconfigurable Computing. Architectures, Tools, and Applications. ARC 2025. Lecture Notes in Computer Science, vol 15594. Springer.

Embedded FPGA Acceleration of Brain-Like Neural Networks: Online Learning to Scalable Inference

Muhammad Ihsan Al Hafiz, Naresh Ravichandran, Anders Lansner, Pawel Herman, and Artur Podobas

2025

Preprint: <https://arxiv.org/abs/2506.18530>. Accepted for oral presentation at the 18th IEEE MCSoc 2025.

WORK EXPERIENCES

Software Engineer

Atlas Copco

Aug 2023 – Mar 2024 Stockholm, Sweden

- Involved in the support of current MicroTorque tools and developed some tests for the peripherals. Mostly use C programming for microcontrollers.

Electronics Engineer

BPPT - Agency of Assessment and Application Technology

Jan 2018 – Aug 2021 Jakarta, Indonesia

- Developed an electronics system and programmed the microcontroller with C and C++ to support the project of Indonesia Tsunami Early Warning Systems.

EDUCATION

PhD (Neuromorphic Accelerator)

KTH Royal Institute of Technology, Sweden

April 2024 – Present

M.Sc (Embedded Systems)

KTH Royal Institute of Technology, Sweden

Sept 2021 – Sept 2023

B.Eng (Engineering Physics)

Universitas Gadjah Mada, Indonesia

Sept 2013 – June 2017

CGPA: 3.57/4.0

REFERENCES

- Artur Podobas (Podobas@kth.se)** Assoc. Professor at KTH Royal Institute of Technology (First Supervisor)
- Pawel Herman (paherman@kth.se)** Professor at KTH Royal Institute of Technology (Second Supervisor)

SKILLS

FPGA C/C++ Python
Microcontroller VHDL Linux
GPU
Electronics Design

SOFTWARES

Vivado Design Suite Vitis HLS
CUDA Matlab & Simulink

HONOR & AWARDS

- Satyalancana Wira Karya (Medal for Providing an Example of Meritorious Personality).** (Aug 2021) Issued by The President of the Republic of Indonesia because of my involvement in the project of Indonesia Tsunami Early Warning Systems.