

Mohammad Amin Hasanpour

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1. EDUCATION

- Ph.D. **Technical University of Denmark (DTU)** Lyngby, Denmark
Applied Mathematics and Computer Science January 2023 – (January 2026)
Thesis: Embedded Artificial Intelligence (eAI)
Supervisor: Dr. Xenofon Fafoutis
- M.Sc. **Sharif University of Technology** Tehran, Iran
Electrical Engineering September 2019 – September 2021
Thesis: Improvement of Deep Learning-Based Coding Algorithms
Supervisor: Dr. Alireza Farhadi
Cumulative GPA: 4.0/4.0, Thesis grade: Excellent
- B.Sc. **K. N. Toosi University of Technology** Tehran, Iran
Electrical Engineering September 2015 – September 2019
Thesis: Design and Fabrication of an IoT Platform
Supervisor: Dr. Yousef Darmani
Cumulative GPA: 3.67/4.0, Thesis grade: Excellent

2. RESEARCH INTERESTS

TinyML, Machine Learning, Deep Learning, Embedded Systems

3. SKILLS

- Proficient in Machine Learning, Deep Learning, TensorFlow, Keras, Python, C++
- Experienced in Linux, MATLAB, Java, CUDA, VHDL, Verilog, Circuit design, PCB Design, Android Studio, HTML, CSS, JavaScript, PHP, Assembly, AVR microcontrollers, Arduino programming, GSM modules, ESP8266 programming

4. PUBLICATIONS

MA. Hasanpour, R. Engholm, X. Fafoutis, “Pump Cavitation Detection with Machine Learning: A Comparative Study of SVM and Deep Learning” 2024 IEEE Annual Congress on Artificial Intelligence of Things (AIoT), 2024

E. Njor, MA. Hasanpour, J. Madsen, X. Fafoutis, “A Holistic Review of the TinyML Stack for Predictive Maintenance”, under review

5. SELECTED PROJECTS

A TinyML automation system + Benchmarking

An automation system for generation, conversion, compilation, and testing of models on embedded systems. It currently supports various types of models, four major eAI conversion tools (like TFLM), and two different microcontrollers (ARM Cortex-M4 based and Renesas RX65N). Further, we have conducted an extensive benchmark between these tools, and also their performance in different condition.

Improvement of Deep Learning-Based Coding Algorithms

Developed new methods to increase the performance of existing coding algorithms (including almost all deep learning-based coding networks). In the test case, achieved more than 25% bitrate reduction while maintaining reconstruction quality.

Improvement of DL-based JSCC structure using RNNs

Decreased network's parameters count by 40% without loss in performance

Cassava leaf disease classification of Kaggle competition

As part of the final project of the Deep Learning course. Several network architectures and methods have been employed in this project, including ResNet, Inception-ResNet-v2, VGG16, EfficientNet, CGAN, CycleGAN, data pipelining, test time augmentation, and k-fold cross-validation. Achieved the best performance in the class.

Implementation of MS-VAN for NWPU VHR-10 object detection

MS-VAN is an advanced object detection network architecture that uses ideas presented in Faster R-CNN, skip-connected autoencoders, and attention modules

Generative Adversarial Networks (GANs) adventure

Explored different types of GANs. Designed a GAN-based network including LSTM layers to be a composer. Achieved a stable DCGAN network to generate MNIST like images. Studied the architecture of CycleGANs to change the data domain.

Cartpole racing with the help of Reinforcement Learning

Developed a policy gradient-based agent to run while balancing a pole in a constructed environment

Implementation of Deep JSCC image transmission

An autoencoder based coding algorithm that outperforms concatenation of JPEG or JPEG2000 compression with a capacity-achieving channel code at certain conditions

Generating images using different types of AEs

Compared performance of simple AE, variational AE (VAE), and Disentangled VAE on the MNIST dataset

Design and Fabrication of an IoT Platform

Accomplished by designing a gateway and sensor boards, setting a server, and developing an Android application

BuyNow

Working on the project of the smart store as an intern at HardTech. Upgraded the project to have a local login option. Changed communication protocol from MQTT to HTTP. Developed an auto-update system. Launched a debugging system. Designed a more user-friendly interface

6. TEACHING EXPERIENCE

Teaching Assistant of Deep Learning
Instructor: Dr. Jes Frellsen

September 2023 – November 2023

Teaching Assistant of Deep Learning
Instructor: Dr. Emad Fatemizadeh

September 2021 – January 2022

Teaching Assistant of Operating Systems
Instructor: Dr. Xenofon Fafoutis

September 2023 – November 2024

Teaching Assistant of Parallel Programming and Architectures
Instructor: Dr. Matin Hashemi

January 2021 – July 2021

Teaching Assistant of Medical Image Analysis and Processing
Instructor: Dr. Emad Fatemizadeh

January 2021 – July 2021

7. SELECTED COURSES

Deep Learning course at the Sharif University of Technology – Grade: 4.0/4.0

Machine Learning Operations at DTU – Grade: 4.0/4.0

Deep Learning Specialization by deeplearning.ai on Coursera – Grade 100/100

Neural Networks course at the Sharif University of Technology – Grade: 4.0/4.0

Data Pipelines with TensorFlow Data Services on Coursera – No credit

8. ACHIEVEMENTS AND AWARDS

Awarded funding to present research at IEEE conference in AIoT (2024, Melbourne)
Otto Mønstedts Fond

Ranked 3rd in the nationwide entrance examination of electronics master studies
Iran's national organization of educational testing. Among ~15000 participants

Second place in the Pooyesh Nasir tournament
Department of Electrical Engineering, K. N. Toosi University of Technology

Nominated for the best bachelor project
Department of Electrical Engineering, K. N. Toosi University of Technology

9. LANGUAGE SKILLS

Persian: Native

English TOEFL iBT (2021): Total 105 (Reading 27 - Listening 28 - Speaking 23 - Writing 27)