Amirhassan Babazadeh Darabi

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Education

Master's Degree in Electrical and Electronics Engineering   **2022–2024**
Koc University, Istanbul, Turkey

Thesis: Deep Learning Based Resource Allocation for Ultra-Reliable Communications in Wireless Control Systems
Advisor: Prof. Sinem Coleri; **GPA:** 3.29/4

Bachelor's Degree in Electrical and Electronics Engineering   **2017–2022**
University of Tabriz, Tabriz, Iran

Thesis: Image Captioning with Flickr8k and Flickr30k Datasets
Advisor: Prof. Hadi Seyedarabi; **GPA:** 16.61/20 (3.41/4)

High School Degree, Math and Physics   **2014–2017**
National Orginization for Development of Exceptional Talents (SAMPAD)

Research Interests

Wireless Networks; Machine Learning & AI; Wireless Communications; Communications Theory; Information Theory; Optimization

Experience

- Research Experience
  Research Assistant   **2022–present**

  Koc University, Istanbul, Turkey

  Research Assistant in Wireless Networks Laboratory (WNL). Conducting research developing deep reinforcement learning and generative AI approaches applied to wireless communications scenarios.

- Teaching Experience
  Teacher Assistant   **2021–present**

  Koc University, Istanbul, Turkey

  Teacher Assistant for ELEC411/511 Digital Communications (Fall 2022)
  Teacher Assistant for ENGR421 Introduction to Machine Learning (Fall 2023)
  Teacher Assistant for INDR344 Modeling and Simulation (Spring 2023)
  Teacher Assistant for ELEC428/528 Communications Networks (Spring 2024)

Tabriz University, Tabriz, Iran

Teacher Assistant for Probability and Statistics for Engineering (Fall 2021)

- ## Professional Experience
  Intern   **2021–2022**

Azar Sanat Kahroba Tarasheh (ASKTCO), Tabriz, Iran

Project: Detection and Segmentation of Car Plate Numbers Using Both Deep Learning and Conventional Image Processing Techniques

Vice President of IEEE Tabriz Branch   **2020–2022**

Publications

H. Q. Ali, **Babazadeh Darabi, Amirhassan**, and S. Coleri, "Optimization theory based deep reinforcement learning for resource allocation in ultra-reliable wireless networked control systems," *IEEE Transactions on Communications*, pp. 1–1, 2024

Babazadeh Darabi, Amirhassan and S. Coleri, "Diffusion model based resource allocation strategy in ultra-reliable wireless networked control systems," *arXiv preprint arXiv:2407.15784*, 2024

M. Nateghi, **Babazadeh Darabi, Amirhassan**, M. A. Tinati, B. M. Tazehkand, and M. R. G. Aghdam, "A novel ASCII based ECG compression and reconstruction algorithm for on-line ECG monitoring," (*Ready to submit*), 2023

Academic Projects

Deep reinforcement learning for joint channel selection and power control in D2D networks
Selecting channel and power in a D2D network for each agent using DQN algorithm (PyTorch is used to implement DQN)

PCA neural network application with local learning rule
Applied Principle Component Analysis (PCA) using Spiking Neural Networks (SNN) with local learning rule.

EEG signal compression by Huffman quantization approach in PYTHON
Applied Huffman quantization method to filtered EEG signals to compress the data and decompress it using the reverse technique

Information Maximization Criterion as Regularizers for Neural Networks
Applied information maximization criterion as regularizer block to enhance the generalization ability of neural networks and solve the dying ReLU problem using PYTORCH

Skills

PROGRAMMING LANGUAGES	PYTHON, MATLAB, C/C++, Verilog
SOFTWARE	ns-3, CST Microwave Studio, Ansys HFSS, Advanced Design Systems (ADS), Proteus, Altium Designer, Quartus and ModelSim
OTHER	LaTeX, Linux, git, vim
LANGUAGES	English (fluent), Turkish (fluent), Persian (native), Azeri (native)

References

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   E-mail: *scoleri@ku.edu.tr*

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