Salar Shakibhamedan

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Education

2021 – Now   **Ph.D., Technische Universität Wien (TU-Wien)**
APROPOS Project, Funded by European Union's Horizon 2020 (H2020) Marie Sklodowska-Curie Innovative Training Networks.
Thesis: *"Deep Learning Efficiency at the Edge Through Approximation-Inspired Optimization"*
Supervised by: Prof. Axel Jantsch and Prof. Nima TaheriNejad
Link: APROPOS Project

2015 – 2018   **M.Sc., K. N. Toosi University of Technology** in Electrical Engineering.
Thesis: *" Multimodal (Audio-Visual) Blind Source Separation by Using Information Theory"*.

2010 – 2015   **B.Sc., K. N. Toosi University of Technology** in Electrical Engineering.
Thesis: *" (First) Persian Musical Instruments Recognition System"*

Research Experience

Jan 2025 – July 2025   **Visiting Research Fellow**, University of California, Irvine
- Developing LLM-powered agentic AI systems for generating healthcare data with a focus on mitigating bias and ensuring fairness.

Jul 2021 – Now   **Marie Skłodowska-Curie Actions PhD Fellow, Researcher** at the Technische Universität Wien (TU-Wien).

Aug 2021 – Now   **Peer Reviewer**
- Journals: IEEE TCAD, IEEE Design & Test, ACM Computing Surveys, ACM Transactions on Embedded Computing Systems
- Conferences: DAC, ISCAS, ICCAD, ISVLSI

Fall 2023, 2024   **Course Assistant**
- Course Assistant in Emerging Computing Paradigms at Heidelberg University

Oct 2018 – Jan 2019   **Research Assistant** at the K. N. Toosi University of Technology.
- Diverse projects from digital and audio signal processing to machine learning

Feb 2016 – Jan 2018   **Teacher Assistant** at the K. N. Toosi University of Technology.
- Course Assistant in (Advanced) Digital Signal Processing and Digital Image Processing

Work Experience

May 2020 – Apr 2021   **Machine Learning Engineer** at PART AI.
- Developed ML/DL solutions for commercial applications in computer vision, speech (e.g., music-related tasks), and related areas.

Nov 2018   **Telecom Engineer** at FlipNet.
Maintained Irancell network (mobile cellular network).

Jun 2016 – Apr 2017   **Front Office (FO) Engineer** at MTN Irancell.
Monitoring and managing Irancell network (mobile cellular network)

Skills

Digital Skills   Machine Learning/Deep Learning:
- Experienced in working with TensorFlow, Keras, and PyTorch.

Computer Vision, Embedded Deep Learning

Skills (continued)

	🔖 Digital (Acoustical) Signal Processing/Digital Image Processing/Multimodal Signal Processing
Hardware Programming	🔖 Raspberry Pi, Nvidia Jetsons
Programming	🔖 Python, C, C++, MATLAB, Java, R.
Miscellaneous	🔖 Academic research, teaching, training, and publishing.
Computer Skills	🔖 Linux, LaTeX, Git, and Docker.
Languages	🔖 English: Fluent (C1), German: Elementary (A2), Persian: Native.

Research Publications

1 Shakibhamedan, Salar, Nima Amirafshar, Nima Taherinejad, and Axel Jantsch (2025). "Heterogeneous Efficient Vision Models Bridging Accuracy and Energy Efficiency (Under Revision Paper)". In: *IEEE Transactions on Pattern Analysis and Machine Intelligence*.

2 Shakibhamedan, Salar, Nima Amirafshar, Ahmad Sedigh Baroughi, Hadi Shahriar Shahhoseini, and Nima Taherinejad (2024). "ACE-CNN: Approximate Carry Disregard Multipliers for Energy-Efficient CNN-Based Image Classification". In: *IEEE Transactions on Circuits and Systems I: Regular Papers*, pp. 1–14. ⚲DOI: 10.1109/TCSI.2024.3369230.

3 Salar Shakibhamedan, Anice Jahanjoo, Amin Aminifar, Nima Amirafshar, Nima TaheriNejad, and Axel Jantsch (2024). "An Analytical Approach to Enhancing DNN Efficiency and Accuracy Using Approximate Multiplication". In: ***ICML Workshop on Advancing Neural Network Training: Computational Efficiency, Scalability, and Resource Optimization (WANT@ICML 2024).***

4 Shakibhamedan, Salar, Amin Aminifar, Nima Taherinejad, and Axel Jantsch (Feb. 2024). "EASE: Energy Optimization through Adaptation – A Review of Runtime Energy-Aware Approximate Deep Learning Algorithms (Submitted Paper-ACM Computing Surveys)". In.

5 Salar Shakibhamedan Nima Amirafshar, Axel Jantsch Nima TaheriNejad (2025). "Heterogeneous Approximate Multiplications: A New Frontier for Practical DNNs (Poster Paper)". In: *2025 62st ACM/IEEE Design Automation Conference (DAC)*. IEEE.

6 Saeed Seyedfaraji Severin J ager, Salar Shakibhamedan Asad Aftab Semeen Rehman (2024). "OPTIMA: Design-Space Exploration of Discharge-Based In-SRAM Computing: Quantifying Energy-Accuracy Trade-offs". In: *2024 61st ACM/IEEE Design Automation Conference (DAC)*. IEEE.

7 Aminifar, Amin, Soheil Khooyooz, Anice Jahanjoo, Shakibhamedan, Salar, and Nima TaheriNejad (2024). "RecogNoise: Machine-Learning-Based Recognition of Noisy Segments in Electrocardiogram Signals". In: *2024 IEEE International Symposium on Circuits and Systems (ISCAS)*. IEEE.

8 Shakibhamedan, Salar, Amin Aminifar, Luke Vassallo, and Nima TaheriNejad (2024). "Harnessing Approximate Computing for Machine Learning". In: *2024 IEEE Computer Society Annual Symposium on VLSI (ISVLSI)*, pp. 1–6.

9 Damsgaard, Hans Jakob, Antoine Grenier, Dewant Katare, Zain Taufique, Salar Shakibhamedan, Tiago Troccoli, George Chatzitsompanis, Anil Kanduri, Aleksandr Ometov, Aaron Yi Ding, Nima Taherinejad, Georgios Karakonstantis, Roger Woods, and Jari Nurmi (Mar. 2024). "Adaptive approximate computing in Edge AI and IoT applications: a review". English. In: *Journal of Systems Architecture*. ISSN: 1383-7621.

10 Salar Shakibhamedan, Nima Amirafshar, Nima TaheriNejad, and Axel Jantsch (2024). "Approximate Multipliers and Information Bottleneck Theory: A New Approach to DNN Analysis and Optimization". In: *ICCAD Workshop: 9th Workshop on Approximate Computing*.

11 TaheriNejad, Nima and Shakibhamedan, Salar (2022). "Energy-aware Adaptive Approximate Computing for Deep Learning Applications". In: *2022 IEEE Computer Society Annual Symposium on VLSI (ISVLSI)*, pp. 328–328. ⌕DOI: 10.1109/ISVLSI54635.2022.00072.

12 Saeed Seyedfaraji Salar Shakibhamedan, Amire Seyedfaraji Baset Mesgari Nima TaheriNejad Axel Jantsch Semeen Rehman (Submitted Paper-IEEE TC). "3D-PIM: DAC-less, Digital-to-Time modulated, and Data-Aware in-SRAM MAC Accelerator". In: *IEEE Transactions on Computers*.

13 Dewnant Katare Salar Shakibhamedan, Nima Amirafshar Nima TaheriNejad Axel Jantsch Marijn Janssen Aaron Yi Ding (2025). "Approximation Strategies for Vision Models on Edge Devices: An Accuracy-Efficiency Trade-off (Submitted Paper)". In: *IEEE Transactions on Pattern Analysis and Machine Intelligence*.

14 Shakibhamedan, Salar, Kooshan Hashemifard, Farhad Faradji, and Mansour Vali (May 2016). "Persian Musical Instrument Recognition System". In: *International Conference on New Research Achievements in Electrical and Computer Engineering*.

Miscellaneous Experience

Awards and Achievements

2024 — 🔖 Marshall Plan Scholarship: funding to transfer of knowledge between USA and Austria, acceptance rate: 10%.

🔖 KUWI Grant: Research grant, TU Wien

2023 — 🔖 DAC Young Fellowship, The 60th Design Automation Conference.

2018 — 🔖 Ranked in the top 10% among approximately 1500 participants in the nationwide university entrance exam for Computer Science - M.Sc. degree.

2015 — 🔖 Acceptance in the nationwide university entrance exam (top 3%) for the master's degree (Electrical Engineering)

2010 — 🔖 Ranked in the top 1% among approximately 320000 participants in the nationwide university entrance exam in the field of mathematics and physics for the B.Sc. degree.

Certification

🔖 Certifications from Coursera. For details please check my linkedin.

References

Univ.Prof. Dipl.-Ing. Dr.techn. Axel Jantsch,

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Vienna University of Technology (TU Wien)

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Prof. Dr. Nima TaheriNejad,

Institute of Computer Technology (ICT), Faculty of Electrical Engineering and Information Technology,

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