



AHMAD REZAEI

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ABOUT ME

Born: 26.03.1996 in Sirjan - Iran

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Nationality: Iranian

Family status: Single

RESEARCH INTERESTS

Explainable AI, Computational graphs for DL, Digital design, Bioinformatics

ACADEMIC WORK

- 12.2021 – 12.2023 **Full-time Research Associate**
Faculty of Computer Science and Automation
Technische Universität Ilmenau
- Research on the optical inspection of PCBAs, aiming to explain the DL's prediction of PCB defects.
 - Developing approaches for global selection of explainable models
 - Overall: 3 Publications in ISI Conferences

- 01.2019 – 07.2021 **Voluntary Researcher**
Reliable & Smart System Laboratory
SBUK
- Research for applied ML in Bioinformatics
 - Conducted research on hardware design and deep learning accelerators
 - Overall: 1 ISI Journal Publication, 1 Arxiv paper

EDUCATION

- 09.2020 – 03.2024¹ **Master of Science | Research in Computer and Systems Engineering**
Technische Universität Ilmenau
Ilmenau, Deutschland
- Grade: 1.54¹ German System (10.65 in Danish system²)
- 09.2014 – 09.2019 **Bachelor of Science | Major: Electrical Engineering, Minor: Electronics**
Shahid Bahonar University (SBUK)
Kerman, Iran
- Grade: 15.14/20 Iranian System (7.14 in Danish system²)
- 09.2008 – 05.2014 **Secondary school and High-school**
National Organization for Development of Exceptional Talents (NODET Special School)
Sirjan, Iran

¹Expected graduation date and Current Grade without Thesis (Shown in M.Sc. transcripts)

²based on linear transform explained in <https://masters.au.dk/am-i-qualified-for-admission/conversion-of-grades>

PUBLICATIONS

- Rezaei, A., Nau, J., Streitferdt, D., Schambach, J. & Vangelov T. (2023, October). *ReproInspect: Framework for Reproducible Defect Datasets for Improved AOI of PCBAs*. In 8th International Conference on Engineering of Computer-based Systems (ECBS), Västeras, Sweden, Springer Nature Switzerland. Accepted - To be presented
- Rezaei, A., Nau, J., Richter, J., Streitferdt, D., & Schambach, J. (2023, June). *FACEE: Framework for Automating CNN Explainability Evaluation*. In 2023 IEEE 47th Annual Computers, Software, and Applications Conference (COMPSAC), Torino, Italy, (pp. 67-78). IEEE. Conference Paper DOI: <https://doi.org/10.1109/COMPSAC57700.2023.00019>
- Rezaei, A., Richter, J., Nau, J., Streitferdt, D., & Kirchhoff, M. (2023, February). *Transparency and Traceability for AI-Based Defect Detection in PCB Production*. In Modelling and Development of Intelligent Systems: 8th International Conference, MDIS 2022, Sibiu, Romania, October 28–30, 2022, Revised Selected Papers (pp. 54-72). Cham: Springer Nature Switzerland. Conference Paper DOI: https://doi.org/10.1007/978-3-031-27034-5_4
- Rezaei, A., Taheri, M., Mahani, A., & Magierowski, S. (2023). *LRDB: LSTM Raw data DNA Base-caller based on long-short term models in an active learning environment*. arXiv preprint arXiv:2303.08915. Arxiv Journal Paper DOI: <https://doi.org/10.48550/arXiv.2303.08915>
- Rezaei, A., Mahani, A. (2021). *Noise-based logic locking scheme against signal probability skew analysis*. IET Computers & Digital Techniques, Wiley Online Library. Journal Paper DOI: <https://doi.org/10.1049/cdt2.12022>

ACADEMIC PROJECTS

12.2021 – 12.2023 **Comprehensible Artificial Intelligence for Automatic Optical Inspection of PCBAs**
Fully funded public project with an industrial partner.

* More Academic projects done by me are available at my [personal website](#):
<https://ahmadr75.github.io/>

ACADEMIC EXPERIENCE

- 01.2023 – 06.2023 **Co-supervisor**
Student research assistant
TU Ilmenau
 - Enhancement of CNN model's training in environments with the introduction of new classes.
 - Research and implementation of 5 class incremental learning methods to maintain the accuracy and avoid the model expansion.
- 05.2022 – 09.2022 **Co-supervisor**
Research project for M.Sc.
TU Ilmenau
 - Title: "Methods and Techniques of Imbalanced Learning in Deep Learning".
 - Study and implementation of various sampling and optimization methods.

09.2020 – 02.2021	Program Chair Research Skills Course TU Ilmenau <ul style="list-style-type: none"> • Organizing 11th CCSE2021 Conference on Computer Science, Software and Hardware Engineering, IT. • https://www0.tu-ilmenau.de/ccse2021/
09.2019 – 01.2021	Laboratory Assistant Digital System Design II lab. SBUK <ul style="list-style-type: none"> • Instructing students on design, synthesis, and implementation of MIPS processors on various FPGA devices. • Semesters: September 2019 – January 2020 and September 2020 – January 2021
10.2019	Teacher Assistant Test and Testable Design Course SBUK <ul style="list-style-type: none"> • Atalanta software workshop

HONORS AND AWARDS

04.2020	C++ programming course Certificate of successful completion in Beginning C++ Programming-From Beginner to Beyond course by Frank J. Mitropoulos
06.2021	VLSI CAD Part I: Logic Certificate of successful completion; overall grade achieved: 81.03% Course offered by Professor Rob Rutenbar at Coursera
02.2020	Xilinx Vivado HLS course Certificate of successful completion in FPGA Design with High Level Synthesis Tool(Vivado HLS) course by Digitronix Nepal
09.2018	Top 7 qualified for the second stage of Synopsys Olympiad 13Th Synopsys Microelectronic annual Olympiad in Iran
09.2014	Tuition Waiver Among top 5% of participants, Received full scholarship from SBUK

SKILLS

Languages: English (IELTS 7.5 score), German (C1), Persian (Native)

Programming: Python, Apache Spark, SQL, Oracle, C++/C, Verilog HDL, MATLAB, Assembly

Python packages: PyQt5, Scikit, Matplotlib, Pandas, NumPy, HDFS, Tensorflow 1&2, Pytorch)

Digital Design: Xilinx Vivado Design Suite and HLS, Design Compiler, Cadence SoC Encounter, Modelsim, ChipScope, Espresso Logic Minimizer, H-Spice, P-Spice

Test and Verification: Synopsys TetraMAX, ATALANTA

Microprocessors and Microcontrollers: IAR Embedded Workbench, Codevision, Atmel Studio, Arduino

REFERENCES

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