

ARASH HEIDARI

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EDUCATION

Ghent University **Ghent, Belgium**
Computer Science (*Ph.D*) Aug 2021 – Aug 2025

- **Supervisors:** Dr. Ivo Couckuyt, Dr. Sebastian Rojas Gonzalez
- **Thesis:** Targeting Evaluation, Computation and Interaction Costs in Expensive Black-Box Multi-Objective Optimization

Iran University of Science and Technology **Tehran, Iran**
Electrical Engineering (*MS.c.*) Sep 2016 – Jul 2018

- **Supervisor:** Dr. Sattar Mirzakupchaki
- **Thesis:** DPA-Resistant and Low Power Cryptography in IoT Devices.
- **GPA:** 18.27 / 20

Iran University of Science and Technology **Tehran, Iran**
Electrical Engineering (*BS.c.*) Sep 2012 – Jul 2016

- **Supervisor:** Dr. Sattar Mirzakupchaki
- **Thesis:** Internet-Enabled Control for Enhanced Surveillance System Operation
- **GPA:** 16.19 / 20

EXPERIENCE

IDLab (imec - Ghent University) **Ghent, Belgium**
AI Researcher Aug 2021 – Jul 2025

- Execution of various AI-based projects from diverse corporate clients at IDLab.
- Successful collaborations with industry leaders: Boeing, Sirris, and Atlas Copco.
- Involvement in University-Industry Collaboration (Flanders AI Research Program).
- Supervision of junior researchers and master students.

Iran University of Science and Technology **Tehran, Iran**
AI Researcher Jan 2019 – Dec 2020

- Execution of AI-based projects, as the primary responsibility.
- Collaborations with PhD and master's students on AI-related projects.
- Teaching machine learning, deep learning, and Python programming language.

SKILLS

Programming Python, C/C++, JavaScript, R, TensorFlow, PyTorch, SQL, FastAPI, Plotly

Machine Learning Deep Learning, Time-Series Analysis, Optimization, Computer Vision, Uncertainty Quantification, Anomaly Detection, Resource Efficient ML, Physics-Informed ML, GANs, SNNs, Bayesian ML, GNNs

Software Development GUI Development, Embedded Software Development, Linux

MLOps MLflow, Git, Docker, Grafana

Languages Persian (C2), English (C1), German (B1), Dutch, Spanish, French (A2)

Soft Skills Leadership, Interdisciplinary Collaboration, Public Speaking, Technical Communication, Adaptability, Curiosity-Driven Learning

SELECTED RESEARCH & ENGINEERING PROJECTS

Trustworthy AI for Aerospace Certification 2022 - 2025

- Led a multi-year R&D project in collaboration with Boeing to build trustworthy surrogate models for a safety-critical system, targeting FAA certification.
- Developed and validated high-stakes time-series forecasting model architectures using CNN, LSTM, and Transformers.
- Designed and implemented the core "trustworthy" framework, using Deep Ensembles and Quantile Regression for robust Uncertainty Quantification (UQ) and advanced Anomaly Detection pipelines.
- Built a GUI dashboard that translated complex UQ/failure analyses into actionable insights for engineers, which was key to the project's multi-year extension.

Predictive Maintenance for Renewable Energy 2021 - 2023

- Developed a high-fidelity data-driven surrogate model of a wind turbine's physical behavior in collaboration with Sirris from complex sensor data to enable robust, high-speed simulation.
- Designed a multi-stage predictive maintenance system using anomaly detection methods (e.g., AutoEncoders, One-Class SVMs) to predict equipment failures.
- Implemented representation learning techniques, including Triplet Loss, to map complex sensor states to an informative feature space, improving anomaly separability.

Data-Efficient Preference-Driven Multi-Objective Optimization 2021 - 2025

- Published novel research (GECCO, IEEE TEVC) on algorithms for "expensive" black-box optimization problems where each evaluation is costly.
- Specialized in Bayesian Optimization and Surrogate-Assisted Evolutionary Algorithms (SA-EAs) to find data-efficient solutions.
- Pioneered preference-driven, interactive methods that learn a user's goals in real-time, allowing the algorithm to converge directly to the most preferred region of the Pareto front instead of finding the entire, unmanageable front.

Biomedical Computer Vision: Retinal Pathology Classification 2019 - 2020

- Developed Computer Vision models (CNNs) for the automated classification of retinal pathologies, such as Diabetic Macular Edema (DME), from Optical Coherence Tomography (OCT) scans.
- Researched and implemented Generative Adversarial Networks (GANs) to augment the scarce, imbalanced medical imaging datasets, improving model robustness and performance.

ACHIEVEMENTS

Outstanding Student – Digital Electronic Systems Graduate Program 2018

- Granted direct admission to the Ph.D. program in electrical engineering at Iran University of Science and Technology

REFERENCES

References available upon request.