

Zahra Gharaee

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SUMMARY

- 7+ years of experience in cross-functional teams, leading cross-industry projects across diverse machine learning domains.
- Demonstrated successful leadership and management in multiple projects, achieving notable outcomes.
- Expertise in building, debugging, and deploying resilient machine learning and deep learning models.
- Developed scalable data solutions using TensorFlow and PyTorch, prioritizing usability and feasibility.
- Released several datasets and code repositories, and published papers at prestigious venues such as NeurIPS and ICML.

WORK EXPERIENCE

Postdoctoral Research Fellow | University of Waterloo | Canada

02/2022 – 11/2024

- BIOSCAN Dataset and Benchmark with Centre for Biodiversity Genomics (CBG)
 - Led data science projects involving data structures, data solutions, data migration, and data governance.
 - Generating metadata while performing big data analytics and processing.
 - Leveraging vision software, and libraries for machine learning applications, including image classification.
 - Released multi-modal datasets; over **1 million** (BIOSCAN-5M), and over **5 million** (BIOSCAN-1M) on research and data sharing platforms (e.g., Zenodo, Kaggle and Hugging Face).
 - Released two code repositories on version control systems (e.g., Git) and gained familiarity with AWS.
 - Benchmarked image classification against baselines (ResNet50 and Transformers) by leveraging transfer learning.
 - Fine-tuned backbone models and achieved over 90% accuracy (Micro-F1, Macro-F1) on large-scale datasets.
 - Published articles in NeurIPS 2023 and NeurIPS 2024.
- Microsoft Media Group
 - Authored paper on video object's relationship detection, which enhanced detection performance about 4% (IEEE 2023).
 - Mentored research project on salient object detection applying Transformers on super-pixels for salient object detection.
- Dept. ECE University of Waterloo
 - Mentored project on generative causal inference, which enhanced domain generalization about 8.8%.
 - Published article in ICML 2023.

Postdoc | Linköping University | Sweden

09/2018 – 02/2022

- Autonomous driving project with WASP and SCANIA
 - Managed projects on road network graph learning and reinforcement learning for autonomous driving.
 - Developed, debugged, and executed ML experiments in cloud, parallel computing, and bash environments.
 - Enhanced graph representation learning for unsupervised transductive by 2% and supervised inductive by 10%.
 - Collected, curated, and released geospatial data from OpenStreetMap (OSMnx) for 18 Swedish cities.
 - Released two code repositories on Git.
 - Published articles in Pattern Recognition 2021 and ICPR 2021.
- Managed project on object's 3D shape estimation.
 - Developed and implemented predictive models for self-supervised 3D shape estimation.
 - Enhanced Mean-IoU about 8%, and reduced 3D-Angular-Error about 5° for the CUB dataset.
 - Released code repository on Git.

SKILLS

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|---------------------------------|-------------------------------|---------------------------------|
| • Detail Oriented | • Mathematics | • OpenCV . Pillow . PIL |
| • Teamwork Skills | • Computer Science | • Numpy . Scikit-learn . Pandas |
| • Research and Development | • Artificial Intelligence | • DevOps . MLOPs |
| • Project Leadership | • Big Data Analysis | • SQL . Apache Spark (Pyspark) |
| • Project Management Skills | • Cloud Computing | • Docker . Singularity |
| • Strong Problem-Solving Skills | • LLMs . NLP | • Python . C/C++ |
| • Accountability | • Machine learning Algorithms | • GCP |

EDUCATION

Ph.D. in Cognitive Science | Lund University | Lund, Sweden

- Thesis: Human action recognition by unsupervised learning (e.g., self-organizing maps and growing grid neural networks).

M.Sc. in Mechatronics | K.N. Toosi U of Tech | Tehran, Iran | GPA: 4

- Thesis: Attention control learning of a robotic agent in decision space by reinforcement learning.

B.Sc. in Electrical Engineering | K.N. Toosi U of Tech | Tehran, Iran | GPA: 4

- Thesis: Design and implementation of a MIMO controller for a quad system.