Zahra Gharaee

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Portfolio LinkedIn GitHub Google Scholar

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 oject'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

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

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.