# Omid Memarrast

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## Education

**University of Illinois Chicago, Department of Computer Science**
Doctor of Philosophy in Computer Science; GPA: 4.00/4.00 — Aug 2023
Doctoral Thesis: (Advisor: Brian D. Ziebart)
*Distributionally Robust and Specification Robust Fairness for Machine Learning*
Master of Science in Computer Science — Aug 2021

**University of Tehran, Electrical and Computer Engineering Department**
Bachelor of Science in Software Engineering — Sep 2012

## Research Interests

Fair ML, Responsible AI, Recommender Systems, NLP, Large Language Models, Computer Vision

## Experience

**University of Illinois Chicago** — Chicago, IL
Adjunct Lecturer — Aug 2023 – Present

- Currently teaching IDS 410 Database Systems course to undergrad and grad students. Teaching ER-Models and SQL. Help students get certificates in AWS Academy Cloud Foundation and AWS Academy Data Engineering where they learn how to work with Amazon S3, Athena, AWS Glue, Amazon Redshift, EMR, etc.

Research Assistant — Jan 2019 – Aug 2023

- Implemented *superhuman fair classifier* leveraging techniques from imitation learning. Developed the approach for Logistic Regression and Deep Learning classifiers. Supervised an undergrad student in the project.(ICML 2023)
- Developed fair and robust machine learning algorithms by leveraging a *distributionally robust learning* framework. By constructing a *min-max game* between a predictor and an adversary, we built fair ranking (PAKDD 23), fair classification (AAAI 2020) and fair classification under covariate shift (AAAI 2021) algorithms.

**LinkedIn Corporation** — Sunnyvale, CA
Machine Learning Research Intern — June 2020 – Sep 2020

- Developed an end-to-end pipeline for the *recommendation system* of PYMK (People You May Know) ensuring fairness of exposure for both source and destination members. Developed the framework at the scale using Apache Spark (Scala) and Hadoop. Mentor: Kinjal Basu

**Morningstar, Inc.** — Chicago, IL
Data Science Intern — June 2018 – Sep 2018

- Built a document classification system using LSTM RNN neural networks. Implemented an end-to-end pipeline using LSTM, GRU, Glove Embedding, AWS, Keras, Scikit-learn, Numpy, and Pandas techniques and libraries.

**MITRC Startup** — Tehran, Iran
Software Engineer, Machine Learning — Jan 2014 – March 2016

- Developed pipelines for NLP tasks including tokenizer, chunker, and POS tagger at scale by leveraging Maven, Java EE, Scrum, Git, and Spark techniques and libraries. Built an information extraction system to extract existing relations from text using a bootstrap methodology by augmenting seeds, relations, and patterns in the system.

## Skills

**Programming:** C/C++, Java, Python, JavaScript, MySQL, MATLAB, R, Scala

**Libraries:** PyTorch, Scikit-Learn, Keras, TensorFlow, JAX, NumPy, Pandas, Matplotlib, Seaborn

**Frameworks:** JIRA, AWS, A/B Testing, Hadoop, Spark, Git, HuggingFace

## Publications

[C4] O. Memarrast, L. Vu, and B. D. Ziebart. Superhuman Fairness. *International Conference on Machine Learning (ICML)*. 2023. (27.9 % acceptance rate)

[C3] O. Memarrast, A. Rezaei, R. Fathony, and B. D. Ziebart. Fairness for Robust Learning to Rank. *Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*. 2023. (17.3 % acceptance rate)

[C2] A. Rezaei, A. Liu, O. Memarrast, and B. D. Ziebart. Robust Fairness under Covariate Shift. *AAAI Conference on Artificial Intelligence (AAAI)*. 2021.

[C1] A. Rezaei, R. Fathony, O. Memarrast, and B. D. Ziebart. Fairness for Robust Log Loss Classification. *AAAI Conference on Artificial Intelligence (AAAI)*. 2020. (20.6 % acceptance rate)

[J1] D. Khashabi, A. Cohan, S. Shakeri, P. Hosseini, P. Pezeshkpour, M. Alikhani, M. Aminnaseri, M. Bitaab, F. Brahman, S. Ghazarian, M. Gheini, A. Kabiri, R. Karimi Mahabagdi, O. Memarrast, A. Mosallanezhad, E. Noury, S. Raji, M. Rasooli, S. Sadeghi, E. Sadeqi Azer, N. Safi Samghabadi, M. Shafaei, S. Sheybani, A. Tazarv, and Y. Yaghoobzadeh. ParsiNLU: A Suite of Language Understanding Challenges for Persian. *Transactions of the Association for Computational Linguistics (TACL)*. 2021.

## Workshops and Presentations

[W4] O. Memarrast, L. Vu, and B. D. Ziebart. Superhuman Fairness. *ICLR Workshop on Pitfalls of limited data and computation for Trustworthy ML*. 2023.

[W3] O. Memarrast, A. Rezaei, R. Fathony, and B. D. Ziebart. Fairness for Robust Learning to Rank. *NeurIPS Workshop: Algorithmic Fairness through the Lens of Causality and Robustness*. 2021.

[W2] A. Rezaei, A. Liu, O. Memarrast, and B. D. Ziebart. Robust Fairness under Covariate Shift. *NeurIPS Workshop: Algorithmic Fairness through the Lens of Causality and Interpretability*. 2020.

[W1] A. Rezaei, R. Fathony, O. Memarrast, and B. D. Ziebart. Fair logistic regression: An adversarial perspective. *NeurIPS 2019 Workshop on Machine Learning with Guarantees*. 2019.

## Service

**Reviewer:**

- International Conference on Representation Learning (ICLR) 2024
- Neural Information Processing Systems (NeurIPS) 2021, 2022, 2023
- International Conference on Machine Learning (ICML) 2022

**Program Committee:**

- International Joint Conference on Artificial Intelligence (IJCAI) 2021, 2022
- Association for Computational Linguistics Student Research Workshop (ACL-SRW) 2019, 2020
- European chapter of the Association for Computational Linguistics SRW (EACL-SRW) 2021
- North American chapter of the Association for Computational Linguistics SRW (NAACL-SRW) 2021

**Volenteer:**

- AAAI Conference on Artificial Intelligence (AAAI). 2020

## Teaching Experience

**Primary Instructor:**

- Database Systems (IDS 410) [Information and Decision Science Dept., U of Illinois Chicago] Fall 2023

**Student Supervision:**

- Linh Vu (on Superhuman Fairness paper) June 2022 – May 2023

**Teaching Assistant:**

- Computer Algorithms (CS 401) Fall 2022
- Advanced Machine Learning (CS 512) Spring 2022
- Programming Practicum[C,C++,Java] (CS 211) Sp 2017, Fa 2017, Sp 2018, Fa 2018, Sp 2019, Fa 2019, Su 2022

## Awards & Achievements

Graduate Student Award Scholarship (5000 USD) at U of Illinois Chicago. Jan 2017 – Dec 2017

Offered admission to the M.Sc. program at the U of Tehran as a talented undergraduate student. Fall 2012

## Selected Projects

**Fine-tune LLMs to Solve Sequence-to-Sequence Learning Problems** | GitHub

- Implemented models to predict the SCAN (commands and actions) dataset. Applied a hierarchical approach to seq-to-seq learning with latent neural grammars. Fine-tuned a Large Language Model (T5) on the dataset.

**Twitter Sentiment Analysis using Machine Learning and Deep Learning Techniques** | GitHub, Report

- Implemented various Machine Learning (SVM, Logistic Regression, Multinomial Naive Bayes, XGBoost) and Deep Learning (CNN, LSTM RNN, Bi-LSTM RNN) to perform sentiment analysis over a corpus of tweets.

**Fine Grained Image Classification Using Deep Convolutional Neural Networks** | Report

- Trained four versions of **ResNet** and two versions of **DenseNet** (each with different depths) for the task of recognizing museum artwork attributes.

**Graphical Models for Inference in a Bayesian Network** | GitHub

- Implemented Conditional Random Fields (CRF) augmented with CNN in AlexNet's architecture for structured output prediction.

## References

Brian D. Ziebart, Ph.D. (bziebart@uic.edu) Associate Professor, University of Illinois Chicago

Xinhua Zhang, Ph.D. (zhangx@uic.edu) Associate Professor, University of Illinois Chicago

Anqi Liu, Ph.D. (aliu@cs.jhu.edu) Assistant Professor, Johns Hopkins University

Daniel Khashabi, Ph.D. (danielk@jhu.edu) Assistant Professor, Johns Hopkins University