Ali Omrani

Current Position
Department of Computer Science
University of Southern California
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RESEARCH INTERESTS

- Natural Language Processing
- Robustness and Fairness in NLP

EDUCATION

Ph.D. in Computer Science   Jan. 2020 - May. 2024
University of Southern California
Thesis: *Countering Problematic Content in Digital Space: Bias Reduction and Dynamic Content Adaptation* — Committee: Dehghani, M., Sorensen, J., Ren, X., Jia, R., Piray, P.

M.Sc. in Computer Science   Jan. 2020 - Jan. 2022
University of Southern California
Courses: Data-centric NLP, Robustness in NLP, Applied NLP, Representation Learning, Theory of Machine Learning, Econometrics, Multilevel Modeling, Advanced Algorithms

B.Sc. in Computer Engineering   Sept. 2014 - Sept. 2019
Department of Computer Engineering, University of Tehran   PI: Majid Nili Ahmadabadi

PUBLICATIONS

[1] **Omrani, A.***, Ziabari, A.*, Golazizian, P., Sorensen, J., Dehghani, M. Towards a Unified Framework for Adaptable Problematic Content Detection via Continual Learning — NAACL 2024, Workshop on Online Abuse and Harms (WOAH).

[2] Ziabari, A., **Omrani, A.**, Golazizian, P., Hejabi P., Kennedy, B., Dehghani, M. (2024) Reinforced Multiple Instance Selection for Speaker Attribute Prediction — NAACL 2024

[3] **Omrani, A.**, Ziabari, A., Yu, C., Golazizian, P., Kennedy, B., Atari, M., Ji, Heng., Dehghani, M. (2023) Social-Group-Agnostic Bias Mitigation via the Stereotype Content Model — ACL 2023, Nominated for Best Paper Award (1.6% of papers)

[4] Osborne, M., **Omrani, A.**, Dehghani, M. (2023) The sins of the parents are to be laid upon the children: biased humans, biased data, biased models — Perspectives on Psychological Science

[5] Atari, M., Mehl, M.R., Graham, J., Doris, J.M., Schwarz, N., Davani, A.M., **Omrani, A.**, Kennedy, B., Gonzalez, E., Jafarzadeh, N. and Hussain, A. (2023). The paucity of morality in everyday talk — Scientific Reports.

[6] Mostafazadeh Davani, A., **Omrani, A.**, Kennedy, B., Atari, M., Ren ,X., Dehghani, M. (2021). Improving Counterfactual Generation for Fair Hate Speech Detection. — ACL 2021, Workshop on Online Abuse and Harms (WOAH).

[7] Kennedy, B., Atari, M., Mostafazadeh Davani, A., Hoover, J., **Omrani, A.**, Graham, J., Dehghani, M. (2021). Moral Concerns are Differentially Observable in Language. — Cognition.

[8] Kennedy, B., Atari, M., Mostafazadeh Davani, A., Yeh, L., **Omrani, A.**,..., Dehghani, M. (2020). Introducing the Gab Hate Corpus: Defining and applying hate-based rhetoric to social media posts at scale. — Language Resources and Evaluation

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In Preparation and Under Review

[1] **Omrani, A.**, Sorensen, J., Dehghani, M. Parameter Efficient Learning with Noisy Labels — Under Review at EMNLP 2024

[2] **Omrani, A**, Karimi-Malekabadi, F., Rahmati, E., Ziabari, A., Sorensen, J., Dehghani, M. Cultural Diversity Enhances Offensive Language Detection in Multilingual Models — Under Review at EMNLP 2024

[3] Golazizian, P.*, **Omrani, A.***, Ziabari, A.S., Dehghani, M. Cost-Efficient Subjective Task Annotation and Modeling through Few-Shot Adaptation — Under Review at EMNLP 2024

[4] Karimi-Malekabadi, F., Oyserman, D., Ziabari, A.S., **Omrani, A.** What Doesn't Kill Us: Harsh Ecologies Beget Difficulty-as-Improvement Norms — R&R at Nature Human Behavior

[5] Abdurahman, S., Atari, M., Karimi-Malekabadi, F., Xue, M.J., Trager, J., Park, P. S., Golazizian, P., **Omrani, A.**, Dehghani, M. Perils and Opportunities in Using Large Language Models in Psychological Research — R&R at PNAS Nexus

[6] **Omrani, A.**, Hoover, J., Dehghani, M., Jordan, J., Kteily, N. The Role of Ambiguity in Condemnation of Moral Transgressions — In Preparation

[7] Golazizian, P.*, **Omrani, A.***, Ziabari, A.S., Dehghani, M. Shaping the Perspective: Evaluating ChatGPT's Capability in Subjective Annotation Tasks — In Preparation

[8] Golazizian, P.*, **Omrani, A.***, Ziabari, A.S., Lai, M., Dehghani, M. ACID: Annotation Confidence and Instance Difficulty — In Preparation

[9] Atari, M., **Omrani, A.**, Dehghani, M. Contextualized Construct Representation: Leveraging Psychometric Scales to Advance Theory-Driven Text Analysis — In Preparation

[10] Trager, J., Ziabari, A.S., Davani, A.M., Golazizian, P., Karimi-Malekabadi, F., **Omrani, A.**, ..., Dehghani, M. The Moral Foundations Reddit Corpus — In Preparation

HONORS AND AWARDS

- Best Poster Award, Society for Personality and Social Psychology (SPSP)   2023
- Best Bachelors Thesis Award, Tap30 and University of Tehran   2019
- Ranked **2nd** in Computer Engineering Students Class of 2018, University of Tehran   2018
- DAAD Scholarship for Summer Internship at Fraunhofer IDMT   2017
- Faculty of Engineering Award, University of Tehran   2016
- Ranked **115th** among 200,000+ participants in nationwide university entrance exam   2014
- **3rd** Place in RoboCup Iran Open 2012 Junior Soccer League   2012
- Member of the National Organization for Development of Exceptional Talents   2007

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WORK & RESEARCH EXPERIENCE

Software Engineering Intern   May 2023 - Aug. 2023
Identity Graph, Snap Inc., United States
Manager: Shipeng Gong - Mentors: Bahador Yeganeh & Houshmand Shirani-Mehr

Designed, developed, and deployed a language model to learn user journey patterns on advertiser websites. Integrated this language model into the identity framework, achieving a 3% boost in precision. This enhanced model was subsequently adopted in production.

Software Engineering Intern   May 2022 - Aug. 2022
Business Integrity, Snap Inc., United States
Manager: Xiaojia Zhao - Mentor: Liqun Yu

Constructed a machine learning pipeline to analyze and categorize advertisement website content based on a comprehensive tag taxonomy. Attained an F1 score exceeding 0.8 for most tags. This system was deployed in production to offer tag suggestions, streamlining the annotation process and enhancing recall.

Research Assistant   Jan. 2020-Present
Morality and Language Lab, USC, United States

I focus on the social aspects NLP. My research often involves design, development, and validation of NLP systems with applications to social scientific problems. My work at USC has been published in Scientific Reports, Cognition, Language Resources and Evaluation, and at ACL.

Research Assistant   Aug 2018 - Aug. 2019
Cognitive Systems Lab, University of Tehran, Iran

Worked on the applications of attention mechanism in medical decision support systems under the supervision of Majid Nili Ahmadabadi. My thesis on the topic demonstrated improvements in interpretability and generalization of the system and got the Best Thesis award from University of Tehran and Tap30.

Research Intern   June 2017 - Sept. 2017
Music Information Retrieval Group, Fraunhofer IDMT, Germany

I was responsible for the design and development of a singing voice detection system from weak labels. I applied a deep convolutional neural network to the spectrogram of the music input under the supervision of Estefanía Cano Cerón. Using a mixture of post-hoc analysis methods I improved the performance and reduced the optimal model's size.

Research Intern   June 2016 - Sept. 2016
Data science Lab, University of Tehran, Iran

I learned about Graph Analysis for Big Data and applied it to the Call Data Records (CDR) of Iran's largest mobile operators under the supervision of Behnam Bahrak. We were able to detect anomalies and link them to corresponding real-world events such as popular sport shows, spammers, and special holidays.

Ad-hoc REVIEW

- Association for Computational Linguistics (ACL)

- Empirical Methods in Natural Language Processing (EMNLP)

- Cognitive Science Society (CogSci)

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TEACHING EXPERIENCE

- Tutorial - **Theory-Driven Text Anlysis for Social Psychologists** SPSP 2023
- Guest Lecture - **Applied Machine Learning** USC 2022
- Teaching Assistant of **Analysis of Algorithms** Fall 2022, Summer 2020, Spring 2020
- Head Teaching Assistant of **Artificial Intelligence** Spring 2018
- Head Teaching Assistant of **Software Testing** Fall 2018
- Teaching Assistant in **Network Security** Spring 2018, Fall 2018
- Teaching Assistant in **Operating Systems** Spring 2018, Fall 2018, Spring 2017
- Teaching Assistant in **Databases** Spring 2018, Fall 2018, Spring 2017
- Teaching Assistant in **Engineering Probability and Statistics** Fall 2016
- Teaching Assistant in **Introduction to Computing and Programming** Fall 2015

SKILLS

- **Programming:** Python, C, C++, Java, R, Matlab
- **Machine Learning:** Pandas, Numpy, Scikit-learn, PyTorch, TensorFlow, Transformers
- **Cloud Tools:** BigQuery, Airflow, AI Platform (Vertex AI), Google Cloud Storage (GCS)
- **Statistics**: Multi-level Modeling
- **Languages:** English, Persian