Danial Kamali

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Education

Michigan State University _East Lansing, Michigan, USA_

PhD in Computer Science (**Research**: Vision & Language) _Aug 2022 - Present_

Iran University of Science and Technology _Tehran, Iran_

B.Sc in Computer Engineering (**Research**: Facial Expression Recognition, NLP Lexical Analysis) _Sept 2016 - March 2021_

Experiences

Michigan State University _East Lansing, USA_

Graduate Research Assistant _Aug 2022 – Present_

- Implemented various deep learning tasks in DomiKnowS (A Library for Integration of Symbolic Domain Knowledge in Deep Learning) for the paper.
- Researching Compositional Generalization on multi-modal systems improves generalization in unseen command structures.
- Lead a team of researchers on data gathering, labeling, and baseline preparation on the misinformation detection task.

Zibal _Tehran, Iran_

Backend Team Leader _Aug 2021 - Aug 2022_

- Managed a team of 4 people with the Agile manifesto and improved the team capacity utilization.
- Reviewed backend team merge requests on Gitlab and reduced the defection rate.
- Mentored two interns through 8 weeks of training, one of them joined our team as a junior developer.

Full-Stack Developer _Aug 2021 - Aug 2022_

- **Stack**: ReactJS, Ant Design, LESS.

Backend Developer _Oct 2019 - Aug 2021_

- **Stack**: Django, DRF, TensorFlow2, MongoDB, Postgres, Redis, Celery, Docker, Kubernetes
- Developed data aggregation pipelines for BI system from NOSQL to SQL-based DB for the product team.
- Implemented Django-MongoDB generic view leveraging reusable patterns to increased developer productivity.
- Designed CI/CD using Gitlab and kubernetes for front-end and back-end and automated the developmemt and deploy operations.

IUST Data Mining Lab _Tehran, Iran_

Natural Language Processing Research Assistant _Jun 2019 – Dec 2021_

- Evaluated Farsi Sentences Tokenization and analyzed current Farsi tokenizers.
- Mentored undergrad thesis projects and provided feedback on different stages of their project.

IUST Multi-Agent Systems Lab _Tehran, Iran_

Machine Learning Research Assistant _Jun 2019 – Sept 2019_

- Researched on Image Caption Generation and customized image captioning in Farsi.
- Gathered the Farsi image captioning dataset using the coco dataset.
- Trained the model using the attention mechanism on the mentioned dataset, using TensorFlow.

Publications

- **Kamali, Danial**, and Parisa Kordjamshidi. "Syntax-Guided Transformers: Elevating Compositional Generalization and Grounding in Multimodal Environments." _GenBench: The first workshop on generalization (benchmarking) in NLP_, 2023.
- **Kamali, D.**, Romain, J., Liu, H., Peng, Meng, J., & Kordjamshidi, P. "Misinformation Detection Using Persuasive Writing Strategies." _Joint International Conference on Computational Linguistics, Language Resources and Evaluation_, 2024.
- **Kamali, D.**, Janfada, B., Shensa, E., & Minaie Bidgoli, B. "Evaluation of Persian Tokenizers." (Submitted to _ACM Transactions on Asian and Low-Resource Language Information Processing_).

Skills

Programming	**Python**, Java Script, C/C++, JAVA, C#
AI Frameworks	Sklearn, Tensorflow, **PyTorch**, Keras, HuggingFace, Numpy, OpenCV, NLTK
Tools	Kubernetes, **Docker**, MYSQL, **MongoDB**, Redis, **Celery**, Kafka
Frameworks and Libraries	**Django**, DRF, React, Express, Flask, Unity
Language	**Persian:** _MotherTongue_ **English:** TOEFL IBT test score: 105 (R:29 L:29 S:23 W:24)

Projects

Neural Machine Translation

- Initiated the development of Finglish ol'Saltalneh, an NMT model for Farsi-to-Finglish transliteration, enhancing translation for English forms.
- Curated a dataset of 100,000+ Farsi-English samples, leading data-cleaning efforts to standardize input and improve model training outcomes.
- Devised and applied data augmentation techniques to bolster the dataset, resulting in a 20% BLEU score enhancement for the model.

Facial Expression Recognition

- Developed a convolutional neural network (CNN) that achieved state-of-the-art accuracy on the RAF-DB dataset and competitive results on FER2013.
- Implemented data augmentation and transfer learning techniques to improve model generalizability.
- Implemented statistically aware layers to the network, increasing the interpretability of facial feature representations.

Memotion Analysis: MultiModal Image-Text classification

- Engaged in Memotion Analysis competition on CodaLab, developing a multimodal classification system using NLP and Computer Vision.

Real-time Augmented Reality Sudoku Solver

- Engineered a real-time AR application that captures Sudoku puzzles via video stream, solves them, and overlays the solutions.
- Implemented a custom digit recognition algorithm using neural networks that achieved 95% accuracy on handwritten digits.
- Developed the AR overlay system using OpenCV and Unity, resulting in an interactive and user-friendly application experience.

Awards

2022	**Recipient** Dr. Carl Page Sr Fellowship	_MSU_
2020	**Ranked 1st** Annual evaluation of CE department students	_IUST_
2015	**Ranked among the top 0.2% of the candidates** National Entrance Exam for Graduate Schools	_Iran_
2013, 2014	**Qualified for the second phase** National Mathematics Olympiad	_Iran_
2013	**Qualified for Iran national team** International Mathematics Competition	_Iran_