Mohammadreza Samadi *Last Update: December 2022*

CONTACT INFORMATION

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RESEARCH INTERESTS

- Natural Language Processing
- Information Retrieval
- Data Mining
- Deep Learning
- Machine Learning

EDUCATION

- **University of Alberta**, Edmonton, Canada
  M.Sc. in Computer Science, *September 2021 - 2024 (expected)*
  ◇ *GPA: **4**/4*
  ◇ *Courses: Intro to Machine Learning (A+) / Intro to NLP (A) / Knowledge Graphs (A+) / Querying and Integrating Text and Data Sources (A)*
  ◇ *Supervisor: Prof. Rafiei*

- ***Amirkabir University of Technology**, (Tehran Polytechnic), Tehran, Iran*
  B.Sc. in Computer Engineering *September 2016 - March 2021*
  ◇ *GPA: **3.86**/4 ≃ **18.02**/20*
  ◇ *Bachelor's Thesis (20/20): "Implementation of a Persian Fake News Detection System and a Fake News Crawler Tool" under supervision of Prof. Momtazi*

RESEARCH AND WORK EXPERIENCES

- **Graduate Researcher** at **University of Alberta** *May 2022 - present*
  Working on the document retrieval process in Multi-hop question answering and analyzing different multi-hop question types based on their complexity in the context of query performance prediction. Under the supervision of Prof. Rafiei

- ***Machine Learning Intern** at **Amii*** *May 2022 - September 2022*
  Worked with the industry team to advise the companies that are in the very first stage of the AI spectrum and decided to apply ML to their businesses. I am in charge of acquiring the technical requirements and reviewing the related work in both the industry and academia to recommend appropriate ML solutions.

- ***ML Curriculum Development** at **Amii*** *November 2021 - March 2022*
  Supported the training team for developing AI/ML case studies, preparing course materials, and creating AI/ML-focused labs to help students learn the fundamentals of Python.

- ***Undergrad Researcher** at **Amirkabir University of Technology***

  ◇ *Fake News Detection System* *April 2020 - July 2021*
  Implemented Persian and English fake news detection systems using state-of-the-art transformer-based language models (BERT, RoBERTa, etc) and deep neural architectures (CNN, LSTM, and MLP). During this project, a Persian fake news crawler was developed for scraping fake news from Persian news agencies websites. Under supervision of Prof. Momtazi

  ◇ *Anomaly Detection in Attributed Graphs* *September 2020 - December 2020*
  Worked on detecting outlier nodes in graphs using variational autoencoders. In this study, nodes of the graph were represented by features vectors extracted with different graph embedding algorithm (node2vec and deepwalk), and our proposed model can detect abnormal nodes in the graph. Under supervision of Prof. Amir Haeri

- ***Research Intern** at **IPM Brain Eng. Research Center*** *May 2019 - November 2019*
  Developed a question recommendation system using common text similarity metrics (cosine similarity and word mover's distance) and static word embedding methods (Word2vec and fastText) for recommending medical questions. Under supervision of Prof. Lashgari

Publications And Preprints

- **Samadi, M.**, & Momtazi, S. (2022, May). "Multichannel convolutional neural networks for detecting COVID-19 fake news". Digital Scholarship in the Humanities.
- **Samadi, M.**, Mousavian, M., & Momtazi, S. (2022, January). "Persian Fake News Detection: Neural Representation and Classification at Word and Text Levels". ACM Transactions on Asian and Low-Resource Language Information Processing, 21(1), 1–11.
- **Samadi, M.**, Mousavian, M., & Momtazi, S. (2021, September). "Deep contextualized text representation and learning for fake news detection". Information Processing & Management, 58(6), 102723.
- Kavehzadeh, P., **Samadi, M.**, & Amir Haeri, M. (2021, March). "Unsupervised Anomaly Detection on Node Attributed Networks: A Deep Learning Approach". 2021 The 4th International Conference on Information Science and Systems.

Notable Academic Projects

- **Joint Entity and Relation Extraction** [GitHub]
  Implemented a relation aware model to identify entities and extract relations from text using a two-stage model. The model achieved a superior results than the previous SOTA model (CASREL) and increased the F1-score by 5% - *Impl. in Python*
- **Toxic Span Detection** [GitHub]
  Implemented sequence labeling models (e.g., RoBERTa-CRF) and span boundary detection models for the *Toxic Spans Detection* task at SemEval 2021 (Task 5). POS tags were used besides textual features to improve the model's performance - *Impl. in Python*
- **News Search Engine / Crawler** [GitHub]
  Developed a news search engine with the capability of crawling news (using Scrapy), boolean and vector space searching, and enhanced by clustering and classification algorithms (K-means and naive Bayes) - *Impl. in Python*
- **From-scratch Neural Network using RBF Kernel** [GitHub]
  Implemented a radial basis function (RBF) network which was trained by an evolutionary strategy algorithm, and used for both regression and multi-class classification tasks - *Impl. in Python*

Technical Skills

- **Programming & Scripting Languages**
  Python, Java, C
- **Machine Learning Tools**
  TensorFlow, Keras, PyTorch, scikit-learn

Teaching Experiences

- Introduction to the Foundations of Computation I, University of Alberta — *Fall 2022*
- *Operating System Concepts*, University of Alberta — *Fall 2021, Winter 2022*
- *Applied Linear Algebra*, Amirkabir University of Technology — *Winter 2019*
- *Operating Systems*, Amirkabir University of Technology — *Winter 2019*
- *Computer Architecture*, Amirkabir University of Technology — *Winter 2019*

Language Skills

- **English**: Fluent
  - ◇ **TOEFL iBT**: **102**/120 — *August 22, 2020*
- ***Persian***: *Native*