Yasaman Boreshban

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EDUCATION

Sharif University of Technology   *Tehran, Iran*
Ph.D. in Computer Engineering - Artificial Intelligence   *2018 - 2023*
GPA: 17.58/20
Thesis Title: Improving Robustness of Question Answering Systems using Deep Neural Networks
Supervisor: Dr. Gholamreza Ghassem-Sani
Adviser: Dr. Seyed Abolghasem Mirroshande
Relevant Course Work: Machine Learning, Deep Learning ,Image Processing, Artificial Intelligence Planning, Stochastic Process

Guilan University   *Rasht, Iran*
M.Sc. in Computer Engineering - Software Engineering   *2013-2016*
Thesis Title: Providing a Question Answering System for Natural Language
Supervisor: Dr. Seyed Abolghasem Mirroshandel
GPA: 19.71/20

- Ranked **first** among all entire university computer engineering students.

Relevant Course Work: Advanced Software Engineering, Advanced Computer Architecture, Modeling and Evaluation of Computer Systems, Natural Language Processing, Advanced Computer Networks, Distributed Systems, Advanced Operating Systems.

Shahid Rajaee Teacher Training University   *Tehran, Iran*
B.Sc. in Computer Engineering - Software Engineering   *2009-2013*
Thesis Title: Design and Implementation of the School Portal
Supervisor: Dr. Negin Daneshpour
GPA: 17.90/20

- Ranked **fourth** among all entire university computer engineering students.

Relevant Course Work: Advanced Programming, Data Structure, Algorithm design, Compilers Theory and Design, Computer Architecture, Internet Engineering, Programming Languages, Software Engineering, Artificial Intelligence, Operating Systems, Database.

Hejab high school   *Sowmesara, Guilan, Iran*
Diploma in Mathematics and Physics   *2005-2009*
GPA: 19.78/20.0

- Ranked **Second** among all high school students in all years.

RESEARCH INTERESTS

- Natural Language Processing
- Machine learning and Deep learning
- Information Retrieval
- Image Processing

PUBLICATIONS

1. **Boreshban, Y**, Mirbostani, S. M, Ghassem-Sani, G, Mirroshandel, S. A, Amiriparian, S, **Improving Question Answering Performance Using Knowledge Distillation and Active Learning**, *Engineering Applications of Artificial Intelligence*, 2023.

2. Mirbostani, S. M, **Boreshban, Y**, Khalifa, S, Mirroshandel, S. A, Rambow, O, **Deep active learning for morphophonological processing** ,*In Proceedings of the 61th Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers), Toronto, Canada. Association for Computational Linguistics*, 2023.

3. **Boreshban, Y**, Mirbostani, S. M, Ghassem-Sani, G, Mirroshandel, S. A, Ahmadi, S. F, Shojaee, G, Kamani, A, Monsef, T, **RobustQA: A Framework for Adversarial Text Generation Analysis on Question Answering Systems**, *Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing: System Demonstrations*, 2023.

4. **Boreshban, Y**, Yousefinasab, H, Mirroshandel, S. A, **Providing a religious corpus of Question Answering System in Persian**, *Journal of Signal and Data Processing*, 2018.

5. **Boreshban, Y**, Mirroshandel, S. A, **A novel question answering system for religious domain in Persian**, *Journal of Electrical Industries*, 2017.

ONGOING PROJECTS

1. Neshaei, S. A, **Boreshban, Y**, Ghassem-Sani, G, Mirroshandel, S. A, **The Impact of Quantization on the Robustness of Transformer-based Text Classifiers**, Under revision.

2. Mirbostani, S. M, **Boreshban, Y**, Mirroshandel, S. A, Rambow, O, **Morphophonological Processing Using a Novel Meta Active Learning Algorithm**, Under revision.

3. Nabipour, A, Shams, M, **Boreshban, Y**, Mirroshandel, S. A, **Knowledge Distillation for Sperm Anomaly Detection in Limited Data Settings**, Under revision.

4. **Boreshban, Y**, Ahmadi, S. F, Shojaee, G, Ghassem-Sani, G, Mirroshandel, S. A, **A novel adversarial attack using evolutionary algorithms on the Question Answering System**.

TECHNICAL EXPERIENCE

Machine Learning Engineer   *2018 - 2023*
Sharif NLP Group, Sharif University of Technology, Tehran, Iran

- Performed research on improving robustness in the NLP, especially in question-answering(QA).
- implemented the active learning approach to QA systems to reduce labeling costs.
- analyzed the effects of the knowledge distillation method on the robustness of QA systems for reducing computational complexity.
- Researched and developed an open-source framework for NLP models' robustness analysis.
- Investigated the effect of quantization on the robustness of Transformer-based NLP text classifiers.
- Implemented various machine and deep learning methods such as SVM, Regression, Adaboost, random forest, k-means, CNN, RNN, LSTM, GRU, GAN, and Autoencoder on various datasets.

- developed various image processing approaches based on the OpenCV library, such as Histogram equalization, deconvolution, inverse filtering, hough transform, smoothing, and style transfer.

Machine Learning Engineer *2013 - 2023*
Guilan NLP Group, University of Guilan, Rasht, Iran
- Investigated and analyzed Knowledge Distillation for Sperm Anomaly Detection in Limited Data Settings without using abnormal sperm images.
- Investigated and analyzed meta-learning and meta-active learning approaches for Arabic Morphophonological Processing.
- Constructed a Persian QA dataset of 2,118 non-factoid and 2,051 factoid questions.
- Implemented a QA system based on the SVM model in the Persian domain.
- developed and analyzed Language Models in Spell Correction.

Research Assistant *2021 - 2022*
Telecommunication Research Center, Tehran, Iran
- Investigated the artificial intelligence applications in agriculture, smart cities, and education.

Research & Develop *2013 - 2014*
EideBekreMobin Company, Tehran, Iran

Web Programming, Internship *2012 - 2013*
Tebyan Company, Tehran,Iran

TEACHING EXPERIENCES

- **2020-2023, Lecturer,** Artificial Intelligence, Natural Language Processing, Engineering Department, Guilan University

- **Fall 2021, Lecturer,** Compiler Design, CE Faculty, Sharif University of Technology

- **2016-2017, Lecturer,** Artificial Intelligence, Engineering Department, Guilan University

- **2016-2017, Lecturer,** Artificial Intelligence, Compiler Design, Presentation of Scientific and Technical, Engineering Department, Tehran University, Fouman Faculty of Engineering

- **2020-2022, Teaching Assistant,** Artificial Intelligence, Deep Learning, Compiler Design, Image Processing, CE Faculty, Sharif University of Technology

- **2014-2015, Teaching Assistant,** Advanced Programming, Compiler Design, Artificial Intelligence, Data Structure, Engineering Department, Guilan University

- **Spring 2013, Teaching Assistant,** Database, Data Structure, Computer Engineering Department, Shahid Rajaee Teacher Training University

PROGRAMMING AND APPLICATION SKILLS

Programming Languages	Python, SQL, Java, C#, ASP.Net, CSS, MATLAB, C++, HTML
Databases	MySQL
Data Visualization	Matplotlib
Libraries	Numpy, Pandas, Scikit-learn, Pytorch Tensorflow, Keras, OpenCV
Soft skills	problem-solving, teamwork, Time management, Creativity
Document Preparation	LaTex, Microsoft office

HONORS AND AWARDS

- Awarded full scholarship from **Sharif University of Technology (SUT)** in computer engineering.

- **Ph.D. Admission** from **Sharif University of Technology (SUT)**, Tehran,Iran, 2018

- **Ph.D. Admission** from **Iran University of Science and Technology (IUST)**, Tehran,Iran, 2018

- **First Rank Award,** for achieving the best GPA among all university Computer Engineering students, 2016

- Awarded full scholarship from **Guilan University** in computer engineering.

- **fourth Rank Award,** for achieving the best GPA among all university Computer Engineering students, 2013

- Awarded full scholarship from **Shahid Rajaee Teacher Training University (SRTTU)** in computer engineering.

- **Ranked top 3%** among nearly 300,000 participants in the National University Entrance Exam of 2009.

LANGUAGES

English: Advanced
Persian: Native

HOBBIES AND INTERESTS

- Listening to music

- Walking

- Watching Movie

- Reading Book

- Cooking

REFRENCES

Dr. Gholamreza Ghassem-Sani *HomePage: http://sharif.edu/ sani*
Associate Professor at Sharif University of Technology *Email: sani@sharif.edu*

Dr. Seyed Abolghasem Mirroshandel *HomePage: https://nlp.guilan.ac.ir/mirroshandel*
Associate Professor at University of Guilan *Email: mirroshandel@guilan.ac.ir*