

Amirhossein Kazemnejad

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Education

July 2020 2015	Iran University of Science and Technology (IUST) ❖ Ranked 3rd among all Iranian Universities* ❖ BSc. Computer Engineering, focus on AI ❖ Supervisor: Dr. Mohammad Taher Pilehvar ❖ GPA [up to now via 140 credits]: 3.88 (Ranked 2nd) • GPA [last two years via 62 credits]: 4.0	Tehran, Iran
2015 2008	Allameh-Helli (NODET) ❖ National Organization for Development of Exceptional Talents (NODET) ❖ Middle-school and High-school ❖ Diploma in Mathematics and Physics with 4.0 GPA	Tehran, Iran

* Based on the *QS World University Rankings 2020*

Research Interests

- ❖ Conditional & Controlled Text Generation (such as Paraphrase Generation and Text Style Transfer)
- ❖ Retrieval Text Generation
- ❖ Dialog Systems
- ❖ Representation Learning for Language
- ❖ Data Augmentation for NLP

Publications

Paraphrase Generation by Learning How to Edit from Samples [\[pdf\]](#)

A. Kazemnejad, M. Salehi, M. Soleymani Baghshah

In Proceedings of The 58th Annual Meeting of the Association for Computational Linguistics (ACL 2020)

- Acceptance rate: 22.7%

Research Experience

Undergraduate Research Assistant

(June 2018 - April 2020)

Machine Learning Lab @ Sharif University of Technology - Supervisor: Dr. Mahdieh Soleymani

Retrieval Paraphrase Generation by Augmenting the Seq2Seq Architecture [\[pdf\]](#)

- ❖ Designed novel **retrieval-based text-generation** model based on **the Transformer architecture**.
- ❖ Achieved **new SOTA** on two common paraphrasing datasets in four metrics (including BLEU and ROUGE).
- ❖ Outperformed 2018 & 2019 papers (from ACL, NIPS, and NAACL) on **both human and automatic evaluation**.
- ❖ Introduced a new **unsupervised data-augmentation framework** for text, which increased the accuracy on Few-Shot-like text classification datasets.
- ❖ Published a paper to ACL 2020 as **the first author**.

Focus: Paraphrase Generation Conditional Text generation Retrieval-based Editor Models Data Augmentation

Undergraduate Research Assistant

(Sep 2017 - Mar 2018)

Advanced BigData Analysis Lab @ Iran University of Science and Technology - Supervisor: Dr. Hossein Rahmani

Anomaly Analysis of Resource Utilizations on a Real-World Time-Series Dataset

- ❖ Created a higher-level large graph with **3M nodes and 17M edges** from the raw dataset (**100M records**) which ended up being used by other lab members for a better and more efficient feature engineering.
- ❖ Designed a combination of **graph-based** features and **data mining** techniques to detect abnormal patterns.
- ❖ Re-implemented a legacy sub-graph extraction code in Apache Spark and **reduced** the execution time **from 2 minutes to 20 seconds**.
- ❖ Replaced old rule-based system.

Focus: Anomaly Analysis Dataset Collection Apache Spark Scala Time-series Dataset

Teaching

Sharif University of Technology

Tehran, Iran

TA for Deep Learning (Graduate Course)

Spring 2020 - Instructor: Dr. Mahdieh Soleymani - [\[course webpage\]](#)

Iran University of Science and Technology

Tehran, Iran

TA for Deep Learning (Graduate Course)

Spring 2019 - Instructor: Dr. Mohammad Taher Pilehvar - [\[course webpage\]](#)

TA for Natural Language Processing

Spring 2019 - Instructor: Dr. Sauleh Eetemadi - [\[course webpage\]](#)

TA for Artificial Intelligence and Expert Systems

Fall 2018 - Instructor: Dr. Mohammad Taher Pilehvar - [\[course webpage\]](#) - **Best course of the semester** (According to the students evaluation)

TA for Fundamentals of Programming

Fall 2016 - Instructor: Dr. Adel Torkaman Rahmani

Software Engineering Experience

Open-Source Contributor at **Tensorflow 2.0**

(Sep 2019 - Present)

Google's Deep learning framework

- ❖ Reported issues, fixed bugs, added new features, wrote unit tests, wrote tutorials, and participated in Github issues for the Seq2Seq sub-module ([#375](#), [#503](#), [#511](#), [#534](#), [#546](#), [#535](#), [#673](#), [#603](#), and [#335](#)),

Technical lead and Software Developer at Mizit

(Nov 2016 - Aug 2017)

An Iranian fin-tech B2C startup targeting Hospitality industry

- ❖ Designed their system architecture including server-client communications. Implemented a WebSocket API for the reservation service using Node.js and Redis, which resulted in fast Server-to-Client communication

Software Developer at Televisak

(Nov 2015 - May 2016)

An Iranian collaborative movie streaming service.

- ❖ Implemented the video stream for their mobile client using common Java libraries

Scientific Contributions

Translations

Stanford CS229 course materials: Supervised Learning

Check out the translated version at the [Stanford's Website](#)

Blog Posts on Medium

TensorFlow 2.0 Tutorial [\[link\]](#)

Transformer Architecture: The Positional Encoding [\[link\]](#)

How to do Deep Learning research with absolutely no GPUs [\[part 1\]](#) [\[part 2\]](#)

Honors and Awards

- ❖ **Ranked 2nd** among 66 undergraduate students in the Department of Computer Engineering with **3.88 GPA**.
- ❖ Awarded **Outstanding Student** Certificate and Prize by Iran University of Science and Technology's President—2017 to 2019.
- ❖ **Top 99.2nd** percentile in the national university entrance exam among near 200,000 participants.
- ❖ Member of **National Organization for Development of Exceptional Talents** since 2008 (acceptance rate < 0.3%).
- ❖ Won the **first place** in IUST ACM tournament in 2016 and 2017.

Computer Skills

Frameworks & Libraries

Frameworks/Packages: Tensorflow, Keras, PyTorch, spaCy, Numpy, matplotlib, Faiss, Flask

Graph Processing Tools: Apache Spark GraphX, Cytoscape

Other: Git, Docker, Redis

Programming Languages

Proficient in: Python, Java, C++, Bash(Linux)

Familiar with: Scala, C, Node.js(JavaScript), SQL

Languages

Persian: Native

English: Proficient (**TOEFL:** 101/120; **GRE:** Q: 168/170, V: 147/170, W: 3.5/6)

Arabic: Familiar

Related Academic Projects

- ❖ **Analyzing The Effects of Semantic Violations on Computational Language Models** [Fall 2019]: Constructed four datasets from WSC, COPA, HellaSWAG, and ARC. Then, analyzed five Transformer-based pre-trained language models against the to infer their commonsense strength.
- ❖ **Ball Collision Detection in Video files** [Fall 2018]: Implemented and designed an algorithm to detect collision of a small ball with wall from video files using OpenCV.
- ❖ **Implementation of common Deep Learning models for NLP** [Spring 2018]: Implemented models: word2vec, Neural Transition-Based Dependency Parser, Window-based NER model, RNN-based NER model (all in Tensorflow). [\[code\]](#)
- ❖ **Classification & Collection of Persian Tweet dataset** [Spring 2018]: Designed an unsupervised algorithm to collect Persian tweets to construct an automatically labeled dataset, which resulted in near 2M data points. Also, implemented a 1D-CNN text classifier network with 87.4% accuracy on the collected dataset. [\[code\]](#) [\[report\]](#) [\[slides\]](#)
- ❖ **Error correction using Neural Machine Translation** [Spring 2018]: Tested a Seq2Seq LSTM network to correct all types of human errors in a written text. [\[code\]](#) [\[report\]](#)
- ❖ **Music Recommender System** [Fall 2017]: Implemented an Item-Based Collaborative filtering algorithm with the accuracy matching Kaggle's top 10 participants. Used pure modern C++ and Intel Threading Block for extra performance and concurrency. [\[code\]](#) [\[report\]](#)
- ❖ **Credit repay failure analysis in the German Bank dataset** [Spring 2017]: Extracted interesting patterns such as the fact that good credit history doesn't necessarily lead to a successful return of future credits/loan. [\[presentation\]](#)

For a more comprehensive list of my projects and presentations, please visit [this page on my website](#)