

Amirhossein Kazemnejad

<https://kazemnejad.com> • +98 912 024 2570 • last update: Dec 2019
<https://github.com/kazemnejad> • a_kazemnejad@comp.iust.ac.ir • ah.kazemnejad@gmail.com

Education

Exp. Feb 2020 2015	Iran University of Science and Technology (IUST) <ul style="list-style-type: none">❖ Ranked 3rd among all Iranian Universities*❖ BSc. Computer Engineering, focus on AI❖ GPA [up to now via 130 credits]: 3.88 (Ranked 2nd) • GPA [last two years via 62 credits]: 4.0	Tehran, Iran
2015 2008	Allameh-Helli (NODET) <ul style="list-style-type: none">❖ 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 Text Generation
 - ❖ Dialog systems
 - ❖ Paraphrase Generation
 - ❖ Question Answering systems
- ❖ Retrieval Text Generation (conditional and unconditional)
- ❖ Text Style Transfer
- ❖ Pre-trained Language Models (Transfer Learning)
 - ❖ Training in the low-resource setting
 - ❖ Data Augmentation in NLP
 - ❖ Intersection of CV and NLP. e.g. VQA systems
- ❖ Natural Language Processing

Research Experience

Undergraduate Research Assistant (June 2018 - Present)

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

Retrieval Paraphrase Generation by Augmenting seq2seq models [[pdf](#)] [[code on GitHub](#)]

- ❖ 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 new **unsupervised data-augmentation framework** for text, which increased the accuracy on Few-Shot-like text classification datasets.
- ❖ Submitted a paper to ACL 2020 as **the first author**.

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

Undergraduate Research Assistant (Sep 2017 - Mar 2018)

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

Anomaly Analysis on big unlabeled time series data

- ❖ Created a big graph from an unstructured data with **3M nodes and 17M edges** which is currently being used by other lab's members for better and more efficient feature engineering.
- ❖ Created **graph-based** heuristic features which resulted in identifying two verified abnormal patterns.
- ❖ Re-implemented a legacy sub-graph extraction code in Apache Spark and Reduced the execution time **from 2 minutes to 20 seconds**.

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

Teaching

Iran University of Science and Technology

Tehran, Iran

TA for Deep Learning (Graduate Course)

Spring 2019 - Instructor: Dr. Mohammad Taher Pilehvar - Website: <https://iust-deep-learning.github.io/972/>

- ❖ It was introduced for the **first time in our university**. All of its materials (assignments, solutions, and the final project) **were original (in English)**. It was a popular course, as 50% of the students were from other departments.

TA for Artificial Intelligence and Expert Systems

Fall 2018 - Instructor: Dr. Mohammad Taher Pilehvar - Website: <https://iust-courses.github.io/ai97/>

- ❖ Course was updated from the previous instructor, so all of its materials (assignments, solutions and the final project) had to be re-designed. It was chosen as "the best course of the semester" based on the student evaluation.

TA for Fundamentals of Programming

Fall 2016 - Instructor: Dr. Adel Torkaman Rahmani

- ❖ Designed Python programming projects, and held weekly practical problem-solving classes for first-year students.

Software Engineering Experience

Open-Source Contributor at Tensorflow 2.0

(Sep 2019 - Present)

Google's Deep learning framework

- ❖ Reported issues, Fixed bugs, add new features, wrote unit tests, wrote tutorials and participated in Github issues in 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 resulted in fast Server-to-Client communication using Node.js and Redis.

Software Developer at Televisak

(Nov 2015 - May 2016)

An Iranian collaborative movie streaming service.

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

Publications

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

A. Kazemnejad, M. Salehi, M. Soleymani Baghshah (Submitted to AAAI 2020)

Scientific Contributions

Translations	Stanford CS229 course materials: Supervised Learning Check out the translated version at the Stanford's Website
Blog Posts on Medium	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 as the **Top-ranked** student for **8 semesters** (since Fall 2015) as a result of obtaining a GPA over 17/20 (A+).
- ❖ **Top 99.2nd** percentile in 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

Deep Learning Frameworks: Tensorflow, Keras, PyTorch
NLP: spaCy, NLTK, Flair
Other Python Packages: Numpy, matplotlib, Faiss, Flask, Scrapy
Graph Processing Tools: Apache Spark GraphX, Cytoscape
Other: Git, Docker

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, AW: to be reported)

Arabic: Familiar

Related Academic Projects

- ❖ **Ball Collision Detection in Video files** [Fall 2018]: Implemented and Designed an algorithm to detect collision of 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 automatically labeled dataset, which resulted in near 2M data points. And 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 the successful return of future credits/loan. [[presentation](#)]

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

Related Courses

All of the courses below are passed with A+ score:

Natural Language Processing	Algorithm Design	Compiler Design
Computational Intelligence	Data Structure	Theory of Languages and Automata
Artificial Intelligence	Computer Networks	Logic Circuits
Computer Vision	Programming with Python	Discrete Mathematics
Signal Processing	Advanced Programming	General Mathematics II

Self Study and MOOC

- ❖ **CS224d: Deep Learning for Natural Language Processing / Spring 2018**
Stanford Course (Online) - Instructor: Prof. Chris Manning & Prof. Richard Socher
- ❖ **NLP (Statistical methods) / Spring 2018**
Coursera Course (Audited) - Instructor: Prof. Dan Jurafsky & Prof. Chris Manning
- ❖ **Machine Learning / Fall 2017**
Coursera Course (Audited) - Instructor: Prof. Andrew Ng
- ❖ **Big Data Analysis with Scala and Spark / Spring 2017**
Coursera in corporation with EPFL (Audited) - Instructor: Dr. Heather Miller
- ❖ **Data mining / Spring 2017**
Graduate Course at IUST - Instructor: Dr. Hossein Rahmani