Yeganeh Kordi | Curriculum Vitae

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RESEARCH INTERESTS

I am broadly interested in AI, Machine Learning, and NLP, particularly, I'm interested in working on teaching machines via instructions, improving the performance of models in zero-shot and few-shot settings, and moving toward generalization and unification.

EDUCATION

- **Bachelor of Science(Double degree)** 2016–2021
  Amirkabir University of Technology *Tehran-Iran*
  - Electrical Engineering *2016–2020*
    - Major: Control Systems
    - GPA: 3.84/4 (18.12/20)
    - Thesis: Designing the hardware for 3D gaze tracking
      Supervisors: Dr. Menhaj, Dr. Khosravi
  - Computer Engineering *2018–2021*
    - Major: Artificial Intelligence
    - Minor: Computer Networking
    - GPA: 3.78/4 (17.78/20)
    - Thesis: Implementing a 3D eye-tracking software
      Supervisor: Dr. Rahmati

PUBLICATIONS

- ♢Wang, Yizhong, ♢Swaroop Mishra, ♣Pegah Alipoormolabashi, ♣**Yeganeh Kordi**, Amirreza Mirzaei, Anjana Arunkumar, Arjun Ashok, et al. 2022. "Super-NaturalInstructions: Generalization via Declarative Instructions on 1600+ NLP Tasks" EMNLP 2022.
  ♢ Co-first authors; ♣ Co-second authors, alphabetical order.
- Khashabi, Daniel, **Yeganeh Kordi**, and Hannaneh Hajishirzi. 2022. "UnifiedQA-v2: Stronger Generalization via Broader Cross-Format Training." arXiv preprint arXiv:2202.12359.

RELEVANT COURSES

- Artificial Intelligence
- Neural Networks and fuzzy logic
- Algorithms and Data Structure
- Machine Learning
- Data mining
- Statistics

RESEARCH EXPERIENCE

- *Allen Institute for AI* and *H2lab at University of Washington*
  Mentors: Daniel Khashabi, Yizhong Wang
  Collaborating on NLP research projects, including July 2021–present
  - UnifiedQA v2
    - We have created a cross-format QA model using the same process as UnifiedQA, but with more supervision. This results in better transfer between different QA variants and generalization to unseen datasets. In addition, this leads to better in-domain and cross-domain results.
  - Super-NaturalInstructions
    - We introduced the SUPER-NATURALINSTRUCTIONS benchmark, which consists of 1,616 diverse NLP tasks and their expert-written instructions. We also built Tk-INSTRUCT, a transformer model trained to follow various incontext instructions, which outperforms existing instruction-following models on our benchmark.

- Language Models Self Instructing
  - We proposed a self-training approach that uses a Pre-trained LM to generate a large number of instructions and their desired outputs and then fine-tunes the model with the generated data. (paper under preparation)

- *JHU Center for Language and Speech Processing*
  Mentor: Daniel Khashabi
  Collaborating on NLP projects: August 2022–present
  - Web Instructions
    - We created a benchmark and model for instructions in HTML layout. This can be used as a challenge for language models and optimizing the crowdsourcing process. (paper under preparation)
- IT lab at university of Tehran
  Mentor: Mohammad Sayad Haghighi
  Several projects and researches, including but not limited to: June 2019–present
  - Estimating bias in Trust Management systems
  - Implementing a NFC Print Management system for the department
  - Working on different approaches to adapt the 3d eye tracking software for medical applications

TEACHING EXPERIENCES

- Teaching Assistant
  - Machine Learning Fall 2021 - Fall 2022
    - Instructor: Dr. Seyedin (Amirkabir University of Technology)
    - Holding NLP workshops, Designing the course's final project, Helping students complete projects.
  - Data Mining Fall 2021
    - Instructor: Dr. Amirmazlaghani (Amirkabir University of Technology)
    - Defining Assignments and projects.
  - Algorithm Design Fall 2021 - Winter 2022
    - Instructor: Dr. Bagheri (Amirkabir University of Technology)
    - Defining Assignments and quizzes, Holding in-person office hours.
  - Cloud Computing Spring 2021
    - Instructor: Dr. Javadi (Amirkabir University of Technology)
    - Defining Assignments, Helping students complete projects.
  - Digital Logic Circuits Fall 2020-Fall 2021
    - Instructors: Dr. Sedighi, Dr. Saheb Zamani (Amirkabir University of Technology)
    - Train and mentor TAs and Graders as a Head TA, Defining Assignments and quizzes, Holding tutoring classes, Holding office hours.

HONORS

- Ranked 3rd in Electrical Engineering, Control Group, among more than 40 students, Amirkabir University of Technology.
- Ranked 14th in Electrical Engineering among more than 160 students, Amirkabir University of Technology.
- Ranked among top 10 percent in Computer Engineering, Amirkabir University of Technology.
- Ranked 148th in university entrance exam, among more than 70,000 participants.
- Ranked 19th in university graduate entrance exam, among more than 5,000 participants.
- Granted admission from the Talented Student Office of the Amirkabir University of Technology for double degree program.
- Granted direct admission from Talented Student Office of the Sharif University of Technology, Amirkabir University of Technology, and Tehran University for graduate study.
- Member of Iran's National Elites Foundation.

PROJECTS

- Implementing of 3D eye tracking method in order to use in medical experiments.
  - Setting up a proper 3D gaze tracking project
  - Designing a headset with eye cameras that is equipped with infrared illuminations

  - Designing a software to collect the 180-degree hemispherical strabismus scanning
  - Turning it into an MVP for field testing (real patient tests in an eye hospital)
- Implementing a Persian search engine from scratch
  - Preprocessing a dataset comprising 7000 Persian news
  - Scoring documents with TF-IDF
  - Building a KNN Similarity Search Engine
- Handwritten Recognition on MNIST dataset
  - Using OpenCV, Keras and TensorFlow to train a deep neural network
  - Designing a Multi Layer Perceptron (MLP) based pattern classifier
  - Comparing different methods
- Providing a face recognition system using PCA algorithm
  - Normalization of the training set
  - Incorporating principal component analysis with the facial recognition system.
- Designing a Smart Agriculture System
  - Using Raspberry Pi Board,ESP8266, Moisture sensor and Temperature sensor to Detect the soil moisture and the temperature.
  - Regulating water flow automatically from water tank to fields
- Designing a load balancer based on CPU and memory utilization
- Implementing a decentralized peer-to-peer network
- Providing a distributed parallel system
- Providing simulation of Phantom Omni using ROS and Gazebo
- Implementing a text editor using C

COMPUTER SKILLS

- **Programming Languages:** Python, Java, C/C++
- **ML and NLP:** SpaCy, NLTK, Hugging Face Tokenizers and Transformers, pandas, Sklearn, TensorFlow, Keras, OpenCV, CUDA, matplotlib, NumPy
- **Web-development:** HTML, CSS, JavaScript, Flask, Django
- **Databases:** MySQL, PostgreSQL
- **Hardware:** ARM, FPGA, VHDL, Verilog, Altium Designer, Proteus Design Suite
- **Cloud Computing:** Hadoop, HAProxy, Kubernetes, Docker
- **Developer Environments:** Jupyter, Colab, IntelliJ, Eclipse, PyCharm, VSCode
- **Other:** Matlab, Git, ROS, Gazebo, Wireshark, OMNeT++, VM VirtualBox

WORK EXPERIENCE

- *Amirkabir Research Center*
  Worked on ARM projects — September 2018
- *Printers Startup*
  Worked on 3D printers — October 2018-February 2019
  - Implementing a code for 3D printers and slicers
- *Amirkabir University of Technology*
  Full-stack web developer — April 2021-present

POSITION OF RESPONSIBILITY

- Member of Technical Committee in IranOpen RoboCup Competition 2018
- Member of Student Scientific Association of electrical engineering at Amirkabir University of Technology

LANGUAGE SKILLS

- Persian: Native
- TOEFL (2021): Internet-based Test, 99/120.
  Reading (28/30), Listening (26/30), Speaking (23/30), Writing (22/30)

References, Further information, and Proofs are available upon Request