

# Farshad Koohifar

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## WORK EXPERIENCE

### MODERN HIRE | MACHINE LEARNING ENGINEER II

Austin, Tx | Feb 2021 – present

- Tech lead for **Continuous Monitoring** of our production models and transcription pipeline through **AWS SES** and **Snowflake** datamarts. This system continuously monitors for abnormal population drift and abnormal empirical prediction histograms through **Stochastic Time Series** modeling of the expected observations.
- Tech lead for **Occupational AI**, which clusters similar occupations based on job descriptions using **BERTopic**, resulting in improved default configuration of new job openings. This project is still in progress and is expected to significantly reduce the required resources for onboarding new clients.
- Designed and implemented multilingual heteroskedastic **Transformer** based **NLP** models using **Torch** and **Hugging-Face** to predict 11 behavioural metrics. Our published results outperformed our competition.
- Designed and implemented a **Tabular Ensemble Learning** model that predicts the job performance and turn over, using pre-hire assessment data. This is used to provide our clients with an estimate of monetary value of our services.

### MODERN HIRE | MACHINE LEARNING ENGINEER

Austin, Tx | Oct 2019 – Feb 2021

- Designed and implemented a **Scalable, Distributed** and **Fault Tolerant** hyperparameter tuning and model training infrastructure with real time worker status monitoring and report generation using **Python**:
  - Asynchronous scaling through **AWS EC2**, **AWS S3**, and **AWS ECR**.
  - Saving 70% of the time spent on infrastructure provisioning from 20 minutes to 6 minutes spent per job.
- Designed and implemented **LSTM** based **NLP** models and compared their performance with **Transformer** based models. As a result, the product technology road map switched to **RoBERTa** and later to **XlmRoBERTa**.
- Designed and implemented a mask based **Model Explainability** tool that enables us to generate heat maps for **Transformer** based models and most important word clusters, the most requested features from our clients.
- Designed and implemented a **CNN** image processing model to predict applicants' race and gender based on their video interviews, ensuring that our models were unbiased and remain unbiased against protected classes.

### MODERN HIRE | MACHINE LEARNING INTERN

Raleigh, Nc | Jul 2019 – Oct 2019

- Designed and implemented audio processing deep learning models to predict verbal expression of our applicants based on **FastAI**. The models match human experts correlation with expert consensus on verbal expression.
- Designed and implemented 7 **audio feature extraction** methods including: Pitch, Pace, Intensity, and Hesitation. We showed significant correlation between pace and on the job performance for bank tellers.

### DARPA | SPECTRUM COLLABORATION GRAND CHALLENGE

Raleigh, Nc | Oct 2017 – Jul 2019

- I led team Wolfpack, North Carolina State University's team of three, that became **Phase I and Phase II finalist** for DARPA SC2 Grand Challenge, leading to a **\$150,000 award and recognition from National Science Foundation**.
- We designed a distributed and fault tolerant collaborative communication network with high computation and spectrum efficiency using **C++** and **Python**.

## EDUCATION

### Ph.D. Electrical and Computer Engineering

Raleigh, NC | Aug 2021

NORTH CAROLINA STATE UNIVERSITY

Research Assistant (RA): Cognitive Networks

### M.S. Electrical and Computer Engineering

Tehran, Iran | Aug 2013

SHARIF UNIVERSITY OF TECHNOLOGY

Teacher Assistant (TA): Intelligent Systems Lab

### B.S. Electrical and Computer Engineering

Tehran, Iran | Sep 2011

IRAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Teacher Assistant (TA): Advanced Networking

## SKILLS

**Languages:** Python, C++, SQL, Matlab,  $\LaTeX$

**Machine Learning:** Transformers, CNN, LSTM, SVM, KNN, Naive Bayes

**Packages:** Pandas, Torch, Numpy, SciKitLearn, Matplotlib, Seaborn

**Technology:** AWS, Docker, Git, Flask, Fastai