

## SUMMARY

Post-Doctoral researcher with 7+ years of combined industry and academia experience in coding, ML, Data-Driven and Prediction Models, and Uncertainty Quantification, with strong mathematics and statistics background; possessing extensive analytical skills, self-motivated, and team-oriented to work in fast-paced, multi-task, and deadline-based environments; proven skills in problem-solving and leading teams; coauthor and collaborator of multiple books and research grants

**Computer Skills:** Python, R, MATLAB, C++, SQL (Microsoft SQL Server, BigQuery), NoSQL (MongoDB), Spark, Tableau, GCP, AWS, ArcGIS

## PROFESSIONAL EXPERIENCE

### Post-Doctoral, Department of Computer Science, Vanderbilt University

*Jan. 2020 – Present*

- Developing applied pipeline and Machine Learning models for prediction of rare events (Python, NoSQL, ArcGIS)
- Assuring Cyber-Physical Systems with Learning Enabled Components and Anomaly Detection (coauthored a grant funded by CISCO)
- Developing a robust platform for allocating limited resources to the demand points and decision making under uncertainty (Python)
- Developed Data-driven and Deep Learning models to predict and optimize energy cost of Multi-Modal transit systems (Python)
- Evaluated Network Resiliency of inland water transportation systems using Graph Theory (Python, ArcGIS, NSF Grant #1600319)
- Supervised research activities of more than 10 interns, undergraduate, and graduate students

### Data Scientist, Department of Mathematics, University of Arizona

*May 2019 – Dec. 2019*

- Developed Optical Character Recognition (OCR) for Arabic and Chinese language and building deep learning model (Python)
- Generated Computer Vision (CV) scripts for data preparation (Matlab)
- Generated Natural Language Processing (NLP) for post processing of OCR (R)
- Developed Predictive Model for hurricanes in North Atlantic basin using Machine Learning and climate data (R)

### NSF Graduate Researcher and Instructor, University of Arizona

*Jan. 2017 – Dec. 2019*

- Led research and development for a \$400,000-NSF project (Grant # CMMI-1403844), “theoretical Foundation and Computational Tools for Complex Nonlinear Stochastic Dynamical Engineering Systems”
- Developed numerical algorithms and user-friendly open-source for risk analysis (MatLab, C++)
- Developed statistical environmental model based on recorded data and data analysis (R, SQL, Weibull)
- Instructor of record: totally 100 students per semester

### Engineer, UNESCO

*Sep. 2015 – Dec. 2016*

- Cooperated in building database and data mining for uncovering mechanisms of injury in seismic damage (R)
- Calculated costs and determined project feasibility based on data analysis

### Research and Teaching Assistant, Sharif University of Technology

*Sep. 2013 – Sep. 2015*

- Proposed an online structural health monitoring technique using Neural Networks and signal processing (Python)
- Teaching Assistant for Mechanics of Material and Instructor of Record for Introduction to MATLAB and Tcl

## EDUCATION

### The University of Arizona, Tucson

*Jan. 2017 – Jan. 2020*

- Ph.D. in Mechanical & Structural Engineering, Minor in Computer Science, GPA 4.0  
Dissertation: A Novel Integrated Method for Reliability Estimation of Dynamic Nonlinear Complex Systems
- M.Sc. in Industrial Engineering, GPA 4.0  
Thesis: Uncertainty Quantification of Sea Waves - An Improved Approach

### Johns Hopkins University, Baltimore

*May 2018 – May 2019*

- Online 40-week Program in Data Science; Final Project: Predictive Model for Text Using Text Mining, GPA 4.0  
Topics: Data Scientist’s Toolbox, Getting and Cleaning Data, Exploratory Data Analysis, Reproducible Research, Statistical Inference, Regression Models, Machine Learning, Developing Data Products, Version Control with Git (GitBash, SourceTree), Google Cloud Platform (GCP), Databases and SQL, GCP BigQuery, AWS, Anomaly Detection, OOP, Geospatial Visualization, Introduction to Spark

### Sharif University of Technology, Tehran, Iran

*Sep. 2013 – Sep. 2015*

- M.Sc. in Risk and Earthquake Engineering, GPA 3.9  
Thesis: Online Nonlinear Structural Damage Detection Using Signal-base Methods and Neural Networks

### Iran University of Science & Technology, Tehran, Iran

*Sep. 2009 – Sep. 2013*

- B.Eng. in Civil & Environmental Engineering, GPA 3.8

## SELECTED PUBLICATIONS

**FULL LIST:** <https://scholar.google.com/citations?user=rbegTHsAAAAJ&hl=en>

- Energy and Emission Prediction for Mixed-Vehicle Transit Fleets Using Multi-Task Inductive Transfer Learning, ECML, 2021.(submitted)
- Learning Incident Prediction Models Over Large Geographical Areas for Emergency Response Systems, KDD, 2021.(submitted)
- A Review of Emergency Incident Prediction, Resource Allocation and Dispatch Models,” ACM Comput. Surv., 2020.(submitted)
- Intelligent Uncertainty Quantification of Complex Dynamic Engineering Systems, J Reliab Eng Syst Saf, 2019
- Editor of book “A First Course in Machine Learning,” Chapman & Hall, 2018
- Seismic reliability assessment of structures using artificial neural network, J Build Eng, 2017