Babak Moghadas

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Education

- **Ph.D.,** Biomedical Engineering, Arizona State University (ASU) **2017 - 2021**
- **M.Sc.,** Polymer Engineering, Tehran Polytechnique **2012 - 2015**
- **B.Sc.,** Polymer Engineering, Tehran Polytechnique **2008 - 2012**

Skills

- **Programming Languages:** Python, SQL, Java, Matlab, R, Fortran
- **Data Analysis & Statistics:** Statistical Inference, Exploratory Data Analysis
- **Machine Learning & AI:** Neural Networks, Machine Learning, Deep Learning, Reinforcement Learning
- **Data Science Libraries & Frameworks:** PyTorch, Numpy, PySpark, Pandas, Scikit-learn
- **Data Visualization & Interactive Tools:** Shiny, Plotly-Dash
- **Soft Skills:** Proactive and detail-oriented problem solver, Adaptable and committed to growth in dynamic environments, Results-Oriented

Professional Experience

Postdoc. School of Public Health, Johns Hopkins University **2023 - present**

- Course Development: Statistical Inferences, Getting and Cleaning Data, Exploratory Data Analysis, Data Products, Regression Models, R Programming
- Analyzing and studying the spike data for Organoid Intelligence team project
- Studying human visual perception and modified Random Forest for classification
- Studying efficacy of iterate averaging in stochastic optimization
- Developing an interactive Python based package (PyGlide) for teaching Data Science materials
- Studying the impact of transfer learning on Reinforcement Learning efficiency
- Developing reinforcement learning based game environments for Organoid Intelligence team project

Postdoc., Johns Hopkins University School of Medicine **2021 - 2022**

- Validating a novel imaging method to characterize tissue microenvironment using molecular MRI
- Studying acidosis ischemic penumbra imaging using simultaneous PET-MRI

Ph.D., ASU **2017 - 2021**

- Modeling pharmacokinetic parameters of tissue to quantify hypoxia from MRI
- Assessment of hypoxia following traumatic brain injury
- Building Bio-Fabrication Systems to Transform Healthcare.

Selected recent course work

Stochastic Search and Optimization, Machine Learning: Deep Learning, Data Structures, Digital Image and Video Processing, Introduction to Probability and Statistics, Linear Algebra, Machine Learning

Teaching/ Mentoring Experience

- Biomedical Data Science; EN.585.771 (Spring 2024, Fall 2024)
- BME 598: Principles of Magnetic Resonance Spectroscopy & Imaging (TA, 2019)
- Mentored three undergraduate students towards their projects to image hypoxia using MRI (2019)
- Mentored two summer intern students towards their projects on using MRI reporters (2018)
- General Programing in Fortran for Engineering Students (TA, 2013, 2014)

Selected Publications/ Presentations

- Empowering Learning: Standalone, Browser-Only Courses for Seamless Education, *arXiv,2023*
- Statistics for Data Science and Measurement Bootcamp,(Open Data Science Conference 2023)
- Deep learning-based motion correction for Semisolid MT and CEST imaging (2022)
- Hypoxia-targeting contrast agent and methods of use thereof, *United States Patent,2023*
- GdDO3NI enhanced MRI allows imaging of hypoxia after brain injury, *JMRI, 2021*
- Development of chitosan membranes using non-toxic crosslinker, *Polymer Bulletin, 2020*
- Novel chitosan-based nanobiohybrid membranes for wound dressing, *RSC Adv., 2016*

References are available upon request.