Baltimore, MD
jshinm@gmail.com

Jong M. Shin

linkedin.com/in/jshinm
github.com/jshinm

Professional Experience

Software Engineer – AI/ML ..... **11/2021 - Current**
Johns Hopkins University - Whiting School of Engineering, Baltimore, MD

- Writing python package tutorials and unit tests for **CI/CD** using **parallel processing** and **GPU utilization**
- Leading a team of 4 AI researchers and their 20+ engineering students to develop state-of-the-art machine learning packages (decision tree based ensemble models) in **python** to be integrated into **scikit-learn**
- Maintaining and publishing research software in an open source setting in GitHub organization
- Published 2 preprints on AI/ML subjects (google scholar)
- Presented at 2022 NAISys conference on machine-human intelligence and machine behavior (poster)

Data Scientist | Machine Learning Engineer ..... **01/2022 – Current**
U.S. Bureau of Labor Statistics, Washington, DC

- Retrained and optimized the transformer-based **NLP model** using 2.4M records achieving 81% accuracy
- Rewrote auxiliary **python** software for machine learning pipeline to support 10+ economists
- Provided **python**-based solutions for critical discrepancies failing to properly assess **ML model** performance
- Deployed newly updated **natural language processing (NLP)** model using **scikit-learn, Tensorflow, PyTorch, Huggingface** through **CI/CD** from gitlab to linux GPU server
- Provided ML solutions to streamline the deployment of the OSH helpdesk **web application**
- Provided collaborative consultations and ML related advices throughout the BLS offices

Research Assistant ..... **09/2020 – 11/2021**
Johns Hopkins University - Whiting School of Engineering, Baltimore, MD

- Studied the extrapolative behavior of various ML algorithms implemented using **python** and **scikit-learn**
- Built a production-grade **web app** and **REST API** to conduct human behavioral experiments using **HTML, Javascript** and **Flask**, and backend database management using **SQLAlchemy** hosted on heroku

Research Intern ..... **05/2021 - 07/2021**
Microsoft Research, Redmond, WA

- Developed a web application that automates the process of causal inference using **React and Typescript** to power front-end and **python Flask** to service back-end in the context of human trafficking and COVID-19
- Built and designed an **end-to-end** pipeline of **causal inference** using **Python DoWhy** package to deploy a research application product branded as ShowWhy
- Led a team of 6 engineers of different technical background to build the initial ShowWhy application

Data Science Intern ..... **01/2021 - 05/2021**
Johns Hopkins University School of Medicine, Baltimore, MD

- Developed a data preparation pipeline for JHU COVID-19 initiative using **probabilistic linkage** methods to provide backend database management in **R**
- Built a data analytic pipeline to parse hospital datasets via **causal inference** methods to provide a clinical data science guideline for COVID-19 vaccination distribution

Data Science Consultant ..... **01/2021 - 05/2021**
MindX, Bethesda, MD

- Built an analytical pipeline to parse out biometric signals from the **multivariate time-series** hologram signal datasets in **python** using **sklearn** and **tensorflow**
- Cleaned and pre-processed real-world multimodal datasets using **pandas** and **hyppo**

Post baccalaureate IRTA research fellow ..... **11/2018 - 05/2021**
The National Institutes of Health, Bethesda, MD

- Built a prediction pipeline for HIV detection by HIV antibody titer in **Python** using **pandas** and **sklearn**
- Conducted parametric/nonparametric multivariate linear regression analysis of the national omics datasets such as metabolomics and proteomics using **Python** and **R**

Graduate Researcher ..... **06/2017 - 10/2018**
Virginia Commonwealth University, Richmond, VA

- Built automated fourier transformed signal detection program in **Matlab** for mouse behavioral experiments
- Conducted 50+ multivariate parametric/nonparametric data analysis on biomedical data for publication

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Skills

Python, R, SQL (MySQL, MS SQL Server), Git, Matlab, Java, Typescript, React, HTML/CSS, Linux (Bash/Shell)

Recent Publications

1. *Deep discriminative to kernel generative modeling* (2022), arXiv [Link]
2. *Prospective Learning: Back to the Future* (2022), arXiv [Link]
3. *Interclass GPCR heteromerization affects localization and trafficking* (2020), Science Signaling [link]
4. *Site-Specific Incorporation of Genetically Encoded Photo-Crosslinkers Locates the Heteromeric Interface of a GPCR Complex in Living Cells* (2020), Cell Chemical Biology [link]
5. *Fully automated head-twitch detection system for the study of 5-HT2A receptor pharmacology in vivo* (2019), Scientific Reports [link]

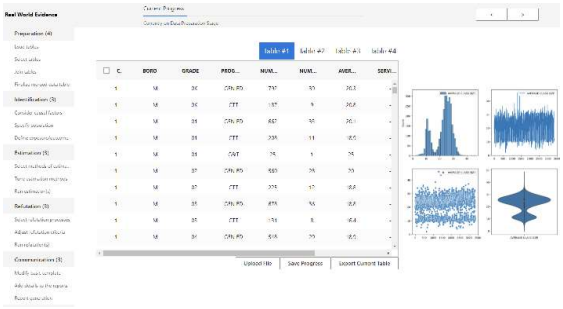
Education

Masters of Engineering, Biomedical Engineering – Data Science (GPA: 4.0/4.0) ..... **May 2021**
Johns Hopkins University - Whiting School of Engineering, Baltimore, MD

Masters of Science, Physiology and Biophysics (GPA: 4.0/4.0) .....**August 2018**
Virginia Commonwealth University - School of Medicine, Richmond, VA

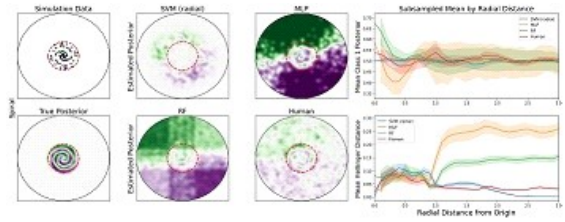
Professional Projects

Automated end-to-end causal inference application (Microsoft Research)



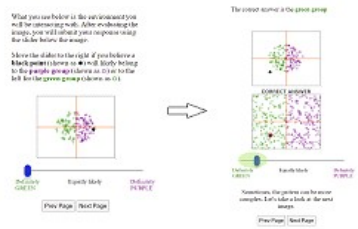
- Devised application design from a data scientist perspective and laid out the basic architecture from scratch
- Built proof-of-concept framework of the app using **Fluent-UI**, **typescript**, and **python-flask**
- Wrote in-house python libraries and jupyter notebooks to develop the **end-to-end data science pipelines**
- Used visualization tools such as **matplotlib** and **seaborn** to generate internal statistics of the data sets within the app

Inductive bias experiment (Johns Hopkins University - JOVO Lab)



- Implemented ML models from **sklearn** and trained on nonlinear simulation data
- Generated mathematically derived posterior probability for exclusive OR and spiral dataset
- Implemented point-wise Hellinger distance and explored extrapolative behaivor of ML models such as **SVM**, **DN**, **RF**
- Generated publication figures and presented experimental findings using visual tools such as **matplotlib** and **seaborn**

Web application for human behavioral experiment (Johns Hopkins University - JOVO Lab)



- Developed **web application** for human behavioral experiment to collect extrapolative inference pattern performed by humans
- Designed front-end using **HTML/CSS**, **JavaScript** and powered back-end using **python-Flask** and **SQLalchemy**
- Managed **SQL database** that stored over 150 participants' behavioral experiment data on heroku