Baltimore, MD
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Jong M. Shin

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Professional Experience

Research Consultant.....**July 2021 to Current**
Progl.ai, Baltimore, MD

- Study the extrapolative behavior of various ML algorithms implemented using **Python sklearn** package
- Build an web app to conduct human behavioral experiments using **HTML, Javascript and Flask**, and backend database management using **SQLAlchemy** hosted on heroku
- Prepare the NeurIPS 2021 workshop on inductive bias of machine extrapolative behavior

Research Intern ..... **May 2021 to July 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
- Coordinated a team of 6 engineers of different technical background to build the initial ShowWhy application

Data Science Intern..... **January 2021 to May 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

Graduate Summer Research Intern.....**July 2020 to Sep 2020**
Johns Hopkins University School of Medicine, Baltimore, MD

- Implemented the **deep learning** framework for radon transformation used in CT image reconstruction known as iRadonMAP in **Matlab**
- Produced augmented image dataset from ImageNet to train iRandomMAP algorithm for training the network

Data Science Consultant..... **January 2021 to May 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.....**November 2018 to May 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..... **June 2017 to October 2018**
Virginia Commonwealth University, Richmond, VA

- Built automated fourier transformed signal detection program in **Matlab** for mouse behavioral experiments

Recent Publications

1. *Interclass GPCR heteromerization affects localization and trafficking* (2020), Science Signaling
2. *Fully automated head-twitch detection system for the study of 5-HT2A receptor pharmacology in vivo* (2019), Scientific Reports

Education

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

Skills

Python (Numpy, Pandas, Sklearn, Flask, Pytorch, DoWhy), R, SQL, Git, Matlab, Typescript, React, HTML

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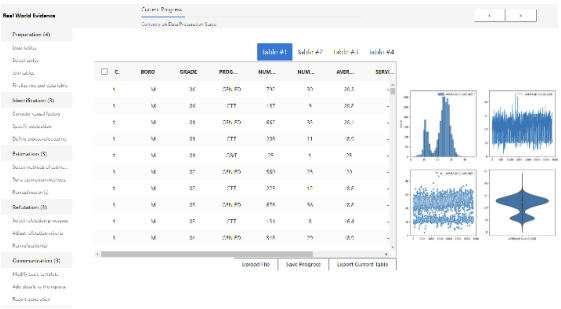
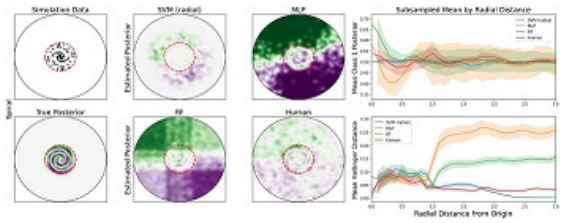
Professional Projects

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



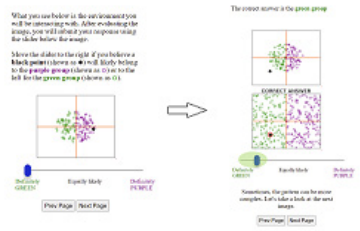
- Devised application design from a data scientist perspective and laid out the basic architecture from scratch
- Built proof-of-concept framework of the app using **Fluent-UI**, **typescript**, and **python-flask**
- Wrote in-house python libraries and jupyter notebooks to develop the **end-to-end data 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)



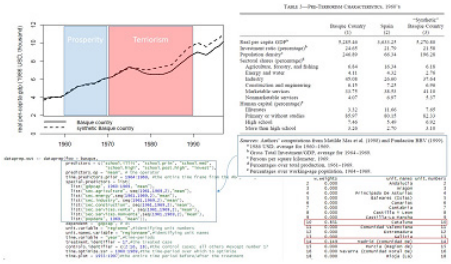
- Implemented ML models from **sklearn** and trained on nonlinear simulation data
- Generated mathematically derived posterior probability for exclusive OR and spiral dataset
- Implemented point-wise Hellinger distance and explored extrapolative behaivor of ML models such as **SVM**, **DN**, **RF**
- 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)



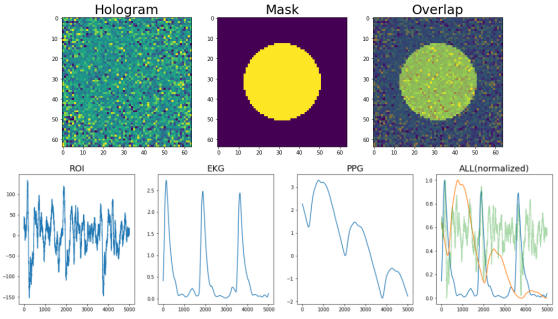
- Developed **web application** for human behavioral experiment to collect extrapolative inference pattern performed by humans
- Designed front-end using **HTML/CSS**, **JavaScript** and powered back-end using **python-Flask** and **SQLalchemy**
- Managed **SQL database** that stored over 150 participants'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

Probabilistic linkage and causal inference on COVID-19 (JHU Medicine & Engineering - CDEM)



- Built an automated system for probabilistic linkage pipeline to clean and join multiple hospital datasets in **R**
- Built a data analytic pipeline to parse hospital datasets via **causal inference** methods to provide analytical guideline for COVID-19 vaccination distribution within underrepresented minorities
- Presented engineering status reports to clinicians generated with **plotly** and **ggplot**

Multivarite time-series hologram signal parsing (MindX)



- Cleaned and preprocessed proprietary hologram **time-series datasets**
- Read and manipulated raw biometric data using **Tensorflow** and visualized detrended noise signals using **matplotlib**
- Investigated statistical significance of the signals detected from the datasets by conducting **multivariate two-sample tests** using in-house statistical software written in **python**
- Explained findings to stakeholders with simple visualization generated using **matplotlib**