JIAXUAN (MARY) WU

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EDUCATION

University of Maryland, College Park – Overall GPA: 4.0 **College Park, MD**
MS in Computer Science Aug 2020 – Dec 2021
University of Maryland, College Park – Triple Major **College Park, MD**
BS in Computer Science, BS in Mathematics Aug 2016 – Dec 2019
BS in Agricultural & Resource Economics Aug 2016 – May 2019

- **Honors**: The Ray A. Murray Scholarship, Academic Honors, Dean's List

SKILLS

Languages: **Java, Python, C**, Ruby, OCaml, Matlab, Rust, JavaScript, TypeScript, HTML, CSS, SQL
Frameworks: AngularJS, Spring Boot, ReactJs, Numpy, Pandas, Node.js, Bootstrap
Databases & Tools: MySQL, Docker, Git, VS Code, IntelliJ, npm

EXPERIENCE

University of Maryland College Park – CS Department **College Park, MD**
Research Assistant Jan 2021 – May 2021

- Set up experiments using **Pytorch** and **Python** to identify which layer of a Neural Network causes the Catastrophic Forgetting (test accuracy may drop 20% on previous tasks after switching to a new task).
- Visualized how the test accuracies and weights norms of different tasks change when training on the tasks sequentially via **Tensorboard** and **matplotlibrary**.
- Developed an approach for long-time and sequential reinforcement learnings inspired by synaptic consolidation, which involves adjusting learning selectively on the weights important for previous tasks to maintain accuracy.

University of Maryland College Park – CS Department & Math Department **College Park, MD**
*Teaching Assistant (**IOS** Dev 436 & Intro to **Java** 131 & Computational Methods 460 & Intro to **AI** 421)* Aug 2019 – Dec 2021

- Host weekly office hours to answer technical questions and provide learning resources; prepare and proctor exams.
- Explained concepts and provided coding examples for various algorithms and data structures in Java.
- Oversaw group projects to apply good coding practices; ensured proper system designs and the success of students' projects.

Citibank **Beijing, China**
Quantitative Research Intern May 2016 – Aug 2016

- Performed data wrangling and exploratory data analysis between SSE, SZSE, and political events over 20 years by computing and comparing **p-value**, **r-squared value** with **Python**.
- Conducted research on a large-scale **linear regression model** to predict quantitative stock trends based on political events.
- Evaluated alpha factors for the long-short equity algorithm, using **Alphalens** to monitor the consistency of returns.
- Coordinated the team to assess financial statements and presented performance evaluations on Chinese stocks.

PROJECTS

Storytelling Webpage of US Wildfires over Time
https://wjx525.github.io/US-Wildfires

- Led team to tidy, modify and wrangle databases of 1.88 Million US Wildfires and Federal Firefighting Costs from over past 24 years to more meaningful CSV files for further data analysis with **Pandas** and **Numpy**.
- Designed intuitive user experience for individual charts and chose the most meaningful attributes of the datasets based on exploratory data analysis via **Tableau** and **Power BI**.
- Accomplished a storytelling Node.js web application showing how US wildfires change over time on both national and state level using **heatmap**, **bar chart**, **scatterplot**, **slider**, **stacked area chart,** and **tilemap** with user-interactive animations via **Javascript** and **D3** library.

Predicting the Chance of Winning in League of Legends
https://wjx525.github.io/LOL-Analysis

- Tidy and modify game statistics from all international matches since 2015 with **Pandas** and **Numpy** libraries in Python.
- Explored and analyzed the relationship between bottom lane champion combinations and victories with **histogram**, **scatterPlot**, **heatMap**, **boxplot,** and **stripPlot** via **Matplotlib.pyplot** and **Seaborn** libraries.
- Applied hypothesis testing to prove the correlation between champion combinations and victories using Multi-Linear regression with **Scikit-learn** and **Ordinary Least Squares Regression**.
- Developed statistical error analysis and minimized **MSE** of obtained data series and experimental results.
- Predicted wins or loses based on champion combinations using Machine Learning with **statsmodels-api**.

ECommerce Full-stack application for tea lovers

- Designed and built an eCommerce website for tea lovers to shop and share experiences about tea products with numbers of features including user registration and authentication, user profile management, shopping cart, checkout, order history, products reviews, dynamic search by categories and keywords, etc.

- Utilized ER Diagram to design a **MySQL** database for storing users, products, and orders information, as well as maintaining relationships among different entities.
- Developed the frontend application based on **AngularJS** framework with **Typescript** and **Bootstrap**, and backend service based on **Spring Boot** framework in **Java** with **Lombok**, **IntelliJ** and **Maven**.
- Integrated the frontend with the backend using **Ajax** provided by **AngularJS $http** service and **RESTful APIs** built with **Spring Data JPA** Repositories and **Spring Data REST**

Understanding and Removing Mistakes and Biases in Face Detection

- Investigated the bias of modern detectors on skin colors that has negative impacts on **object detection** performance on underrepresented classes, and the bias between infrequent and frequent object classes through researching 20 published papers.
- Explored and applied several methods such as **online loss re-weighting**, **data augmentation**, and exploiting unlabeled images with semi-supervised learning methods to reduce the bias.
- Improved the detection performance of underrepresented classes and reduced bias by a clear margin with extensive experiments on BDD100K and COCO datasets.

Data Validation Engine

- Independently developed a Data Validation Engine using **Java** to expedite the procedure and improve the efficiency of data cleaning and validation by 20%.
- Extracted data from Excel and CSV files via **Apache POI** and validated data format based on rules defined in the XML files.
- Used **DOM4J** and **Reflection** to read data validation rules from **XML** files.
- Applied **Strategy Pattern** and **open/closed principle** to implement various data cleaning functions for better code management.