N1917, 5035 S East End Ave.
Chicago, IL 60615

Beryl (Xuan) Zhang

berylxzhang@uchicago.edu
(312)-843-7890

Linkedin: https://www.linkedin.com/in/beryl-x-zhang/
Github: berylxzhang.github.io

EDUCATION

Institute for Molecular Engineering, University of Chicago 07/2018-09/2021
MS in **Molecular Engineering (PhD student master out)**

School of Engineering, University of Pennsylvania 09/2020-12/2021
MS in Computer and Information Technology

College of Computing, Georgia Institute of Technology 09/2020-12/2023
MS in Computer Science

School of Materials, Beijing University of Chemical Technology (BUCT) 09/2014-07/2018
BS in Polymer Materials Science and Engineering

Center for Technology & Management Education, California Institute of Technology 03/2021-11/2021
Post Graduate Program in Full Stack Web Development

PROFICIENCY & INTEREST

Programing: Python, Bash, C/C++, VB, Matlab, R, Java, Javascript/ES6, CSS3/HTML5, Assembly, PHP, SQL, swift, C#
Frameworks/Libraries: Spring MVC/Boot/Cloud, Node.js, React, Redux, D3, JQuery, Hibernate, JUnit, TensorFlow, Android
Databases/Tools: MySQL, MongoDB, Neo4j, NoSQL, Selenium, AWS, Kubernetes, Docker, Maven, Apache, JWT, Git.
Knowledge: OOP/OOD, MVC, Design patterns, Web.

PROFESSIONAL EXPERIENCE

Mukun Education Technology, *remote, China* 05/2021-now
Software Engineer

- Utilized back-end technology spring boot to retrieve data managed by MongoDB and MySQL and set a login administrator account who can update classes and videos of courses.
- Employed front-end technology Vue to display courses and videos on the user's side.

University of Chicago, *Chicago, IL* 10/2018-12/2019
Researcher in Machine Learning (ML), Molecular Dynamics (P.I. Andrew Ferguson)

Takens' reconstruction of dynamical attractors from time series (https://github.com/berylxzhang/candidacy-pipeline)

- Verified Takens' Delay Embedding Theorem via Lorenz attractor and $C_{24}H_{50}$ alkane chain by both supervised ML techniques Artificial Neural Network (ANN) and unsupervised ML techniques such as diffusion map and h-NLPCA
- Applied Wasserstein Generative Adversary Network (W-GAN) to reconstruct $C_{24}H_{50}$ all-atom movement trajectory from the latent space extracted from diffusion map, and the Root-Mean-Square-Distance between the original time series and reconstructed one is below 1nm

Teaching Assistant in After School Matters STEM Lab Internship Program

- Instructed a high-school student for six-week molecular dynamics research

PROJECT EXPERIENCES

Full-Stack

Developed a DooroLearning iphone APP (https://github.com/berylxzhang/Dooro-Learning)

- Employed firebase and auth0 to enable users to create accounts via emails or login with Facebook/Google authentication and manage user's login information.
- Fetched basic user information like names, user profiles, emails and so on from their Facebook or Google account.
- Utilized coredata database to manage each user's gaming data
- Designed flashcard function and hangman games in the app to improve vocabulary learning outcome.

Built a COVID19 US information Inquiry website(https://covid-update-project.herokuapp.com/)

- Utilized SQL to manage latest COVID related information
- Implemented Flask to retrieve data and Python to analyze the data obtained.
- Employed front-end technology React to display COVID related information
- Deployed the project onto heroku.

Front-End

Designed a COVID19 update website(https://covid-update-project.herokuapp.com/)

- Employed bootstrap framework and frontend technologies like html, CSS, JavaScript to design beautiful user interface.
- Implemented Auth0 framework to peronalize each user's dashboard.
- Analysed the data obtained and offered personalized suggestions on best strategies for preventing COVID based on confirmed case density at a certain zipcode.
- Build the website using flask and deployed the project onto heroku.

Back-End

Designed An Airline Booking Portal – FlyAway

- Employed MySQL to manage information like classes, subjects, students, and teachers and got it connected with JDBC.
- Utilized Auth0 to allow administrator to log in and make changes in the database.

Developed a Backend Admin for Learner's Academy

- Implement MySQL to manage information like date, source, destination, airline, and ticket price of airlines and got it connected with JDBC.
- Utilized Auth0 to allow administrator to log in and make changes in the database

Computer Network

Built a SDN(Software-defined networking) Firewall with POX and OpenFlow

- Created a ruleset in a configuration file that describes traffic that should be blocked or allowed
- Designed a SDN which takes in the parameters in the configuration file to create a configurable firewall using an OpenFlow enabled Switch, which extends the functionality that you can achieve with a learning Layer 2 switch (traditional switch) by examining the contents of a packet to decide how to handle it.

BGP(Border Gateway Protocol) hijack and BGP measurements

- Explored the vulnerability of the AS(Autonomous System) and the BGP protocol by employing a malicious attacker or rogue AS to advertise a false ip prefix which does not own or control to reroute internet traffic
- Measured the growth of prefixes and ASes, AS(Autonomous System)-path length evolution, blackholing events by using BGP historical data

Machine Learning

Evaluation of different holding strategies and most important features for large scale company dataset

- Extracted top 20 most important features from large scale dataset consisted of 720 features from over 20,000 companies from 2000 to 2008 using DecisionTreeClassifier, AdaBoostClassfier, RandomForestClassifier, and VotingClassifer, and compared their performace by different evaluation metrics like beta, alpha, information ratio, max annual drawdown
- Compared buy-and-hold strategy with buy-and-sell strategy for both SPY and stock

Analysis and Classification of Malwares

- Extracted API call from Json report files analyzed by cukuoo, and then labeled the files by their sha256 code (generated from virus total) as well as suffix of their corresponding types (generated by avclass)
- Trained malheur by optimizing parameters to begin with right number of prototypes and cluster samples and classify prototypes at right distance, and obtained f-score, recall and precision all above 0.85