YUNJIE(RUBY) WU

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EDUCATION

Emory University Atlanta, GA

B.S. in Computer Science & Quantitative Science, psychology track *Expected Graduation 05/2023*

- GPA: 3.9/4.0, CS Major GPA: **4.0/4.0**
- Honors: Computer Science Honors Candidate, Oxford Honors List
- Selected Courses: Data Structure & Algorithm, Machine Learning, Information Visualization, Computational Linguistics, Database Systems, Operating Systems, Linear Algebra, Multivariable Calculus, Probability & Statistics

SKILLS AND INTERESTS

- Programming: Java, Python, C, C#, Assembly, R, SQL, NoSQL, PHP, HTML, CSS, JavaScript, Node.js, D3JS, React, Flask, Unity, Vim, Git
- Personal Interests: handcrafting, traveling, video games & board games, animals, BJD

PUBLICATION

- Juhao Zhang*, Samantha Lin*, **Yunjie Wu***, Jing Zhang, Alanna A Morris, Shivani A Patel, Joyce C Ho. "Deriving And Validating Novel Neighborhood Data For Investigation Of Adverse Outcomes In Patients Hospitalized For Heart Failure: A Feasibility Study," *American Heart Association's annual Scientific Sessions 2022*.

WORK EXPERIENCE

Product Intern, ABC Technology Beijing, China

Industry Chain Graph *12/2020 – 01/2021*

- Designed knowledge graphs to store supply chain data; constructed a **structured database** that enables both structural and natural language queries; established Wiki community based on the knowledge graph
- Explored advanced graph database in terms of its data structure and supporting query, and wiki communities in terms of its authentication design; organized the information for future reference

Teaching Assistant, Emory University Atlanta, GA

Supervised by Prof. *Shun Cheung* *08/2021 – 05/2022*

- Worked as the Teaching Assistant of CS255 Computer Architecture / Machine Level Programming
- Cooperated with other TAs on programming assignments' grading and assisted students with problem sets

RESEARCH

Data Mining for Heart Failure Prediction Atlanta, GA

Research Assistant; Supervised by Prof. *Joyce Ho* *01/2022 - Present*

- Retrieved neighborhood data from Foursquare, Twitter, and Google Places to develop a novel metric for the evaluation of neighborhood deprivation to improve the predicted outcomes of heart failure patients
- Designed and implemented a **web interface** with D3, Flask, and MongoDB that supports the exploration and manipulation of retrieved neighborhood data and census-based healthcare index
- Used Social Deprivation Index as the baseline and obtained a result that demonstrated a comparable performance
- Presented the poster at ***American Heart Association's annual Scientific Sessions 2022***, with the full paper in submission.

Interactive Visualization Tool for Deep Constrained Clustering on Tweets Atlanta, GA

Independent Research; Supervised by Prof. *Joyce Ho* and Prof. *Emily Wall* *06/2022 - Present*

- Retrieved geo-tagged tweets using keywords and built a pipeline consisting of data preprocessing, keyword and embedding extractions, and clustering to depict the neighborhood environment in terms of healthcare resources
- Performed clustering on keyword embedding to conduct topic modeling; applied auto-encoders on user input to iteratively improve the mapping layer for the generation of more user-desirable topics

- Designed an **interactive visualization system** using **React, D3, and Flask** that allows machine learning and health professionals to customize the entire pipeline and iteratively refine clustering by imposing pair-wise soft constraints on keywords for a more accurate prediction result; hosted the system on GitHub.
- Paper in submission to ***IEEE VIS'23***

Detecting Political Tendencies of Major News Media Atlanta, GA
Independent Research; Supervised by Prof. *Jinho Choi* *01/2022 – 05/2022*

- Applied NLP techniques including Linear discriminant analysis (LDA) with Gibbs sampling and Bert-based sentiment analysis on over 30,000 news articles from major US news media; conducted a topic-based analysis to detect potential political leanings
- Generated tables with regard to specific political topics to provide the public with a more straightforward way to view media perspectives; Paper in draft

Predicting Shot Outcomes in the National Hockey League (NHL) -- CMU 2021 CMSACamp Pittsburgh, PA*
Independent Research; Supervised by *R Yurko, S Ventura,* and *B Macdonald* *06/2021 – 08/2021*

- Applied statistical analysis techniques to projects at the intersection of sports and data science
- Built multinomial logistic regression and random forest models using **R** to predict possible outcomes of a shot in NHL and investigated the impact of individual players as a contributing factor
- Presented the work at a ***CMU internal conference*** and hosted a FAQ session for the public

PROJECTS

Game Development, Stuck in the Past -- Italian Education Game

- Engaged in **C#** programming with Unity to design a **2D Top-Down Pixel game** for Emory Italian 101's summer session; integrated user-NPC interaction and designed mini-games for students to practice Italian
- Deployed game to Itch.IO supporting both Windows and Mac versions

App Development, Sync -- a Dual-platform Chatting App

- Used firebase as database and **Swift and Flask** as frameworks to an IOS APP as well as a website
- Applied machine learning model "MobileNetV2" to build a **content-oriented social networking application** that connects users with those who share common interests
- Implemented firebase's built-in user authentication method to help promote app security and verify user identities

Website Development, Learning Management System

- Designed an **interactive website** for students and instructors for courses browsing, assignment grading, and transcript request
- Implemented the website's front-end with **HTML, CSS, & Bootstrap**, back-end with **MySQL & PHP**, and hosted on Google Cloud Platform

VOLUNTEER

Peking Union Medical College Hospital Beijing, China
Social worker *03/2019-06/2019*

- Spent quality time with cancer patients chatting and making handicrafts
- Cultivated positive atmosphere within the cancer ward to help alleviate patients' mental suffering

Newton County Head Start Oxford, GA
Researcher *08/2019-12/2019*

- Volunteered weekly to aid teachers with the care of children, and introduced children to basic concepts such as numbers and colors
- Designed an **e-portfolio** from a developmental psychology perspective and used first-hand observations to help raise social awareness toward children's development and care centers' welfare

*** equal contribution or remote collaboration**