Peiyuan Ma

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Education

University of North Carolina at Chapel Hill Dec 2021

B.S. in Computer Science, B.S. in Statistics, *Phi Beta Kappa*, **GPA**: 3.96/4.0

- **Courses:** Algorithms (TA), Data Structures, Operating Systems, Databases, Compilers, Networking, Web Development

Skills

Languages: Python, Java, JavaScript, C, Racket, SQL, R, HTML, CSS

Development: Spring, Express, JavaEE, Django, Vue, Bootstrap, Mongoose, Sequelize, MyBatis, MySQL, PostgreSQL, MongoDB

Statistics/Machine Learning: Keras, Tensorflow.js, Deep Learning Specialization (Coursera)

Infrastructure&Tools: AWS Solutions Architect Associate, Docker, Maven, Git

Experience

UNC Department of Computer Science *Chapel Hill, NC*

Research Assistant, Eye Tracking for People with ALS May 2020-Aug 2020

- Developed a low-cost eye tracking solution with logistic regression, CNN, SVM, transfer learning on collected data
- Developed a unique website in **face-api.js** to enable users to capture low-resolution eye gaze data within a single press
- Achieved an average test score of 0.955+ on 1000+ collected data using **scikit-learn** and **Keras**
- Researched users' feedback and developed a website for querying and visualizing data to filter out corrupted data
- Perfected the demo website in **Tensorflow.js** to enable users to see the eye tracking results after training

Learning Assistant, Algorithms&Analysis (COMP 550) Aug 2020-Present

- Reviewed frontend code, auto-graded exams and gave 60+ accepted suggestions on software bugs, wording improvements, etc
- Collected 200+ students' focus behavior in assignments and analyzed the data using pandas, matplotlib
- Held 6 drop-in office hours per week to guide students with problem sets and understanding concepts in Algorithms

Selected Projects

miniLisp Interpreter Jan 2021-Apr 2021

- Implemented an environment-passing, OOP interpreter for a lisp-style language from scratch in **Racket**
- Constructed the recursive descent parser based on homoiconicity of **Racket** and built the lexer using regular expression
- Developed lexical scope, procedure, instantiation, inheritance, polymorphism, etc by passing and mutating environment

FTP Client/Server Jan 2021-Mar2021

- Implemented a FTP Client/Server System that supports login, file transfer in **Python**
- Developed common commands (USER, PASS, SYST, TYPE, PORT, RETR, QUIT) and ensured server's robustness
- Achieved C/S communication with TCP socket and maximized client's fault-tolerance

ApparelUNC Sep 2020-Nov 2020

- Collaborated on team of 3 to design and develop a webapp for helping UNC fans choosing the best UNC outfit using **MERN** stack
- Constructed database with **MongoDB**, developed interfaces for CRUD functions in **Express**, and delopyed the app on **Heroku**
- Designed and improved UI with **Bootstrap** and reCAPTCHA so that users have better CRUD experience

Tarheel Shell Aug 2020-Sep 2020

- Developed a shell with a subset of Bash's functionality in 1000+ lines using **C**
- Implemented parsing, redirection, pipelines, debug, changing directory, customized commands, and scripting support

Conway's Game of Life Nov 2019-Dec 2019

- Implemented Conway's Game of Life with MVC architecture, design patterns, and Java Swing GUI API
- Developed config options to enable users to set the board size, intial state, survice&birth thresholds, delay between states, etc