

AUSTIN MAC

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RESEARCH EXPERIENCE

Perceptual Engineering Lab (UCSB) *Researcher*

May 2022 - Present
Santa Barbara, CA

- Built an AR audio storytelling application to automatically parse story text and emit contextually relevant, spatial sound effects based on certain verbal cues (Unity, CSharp, Python)
- Currently working on evaluating the system on live participants

Wu Lab (Columbia University) *Research Assistant*

May 2022 - Present
New York City, NY

- Extended functionality of Precision Interfaces, an interactive query visualization generator, to support the display and interaction of circle, square, area, and geoshape marks from Vega-Lite (Python, JavaScript, Vega-Lite)
- Currently working on implementing a visualization recommendation system

Media Skill Research Lab (UCSB) *Research Assistant*

May 2021 - Present
Santa Barbara, CA

- Developed email client simulator (EMPTI) with text prediction to measure user behavior data for analysis (Express, Node.js, OpenAI GPT-3, PostgreSQL, Heroku, Docker)
- Repo: <https://github.com/austinmacmath/EMPTI>
- Studying automation bias and bias detection in the context of predictive text algorithms

INDUSTRY EXPERIENCE

Roblox *Software Engineering Intern*

June 2021 - Sept 2021
San Mateo, CA

- Built CLI and HTTP server to restart Nomad jobs (Go, Nomad)
- Added features to a Nomad Node Problem Detector to programatically build Docker images (Go, Docker)

Citadel *Software Engineering Intern*

March 2021 - June 2021
Chicago, IL

- Deployed SNMP trap receiver on Kubernetes (Docker, Bash, Python, Splunk, Vault, Kerberos, Pagerduty)
- Built a data collector to publish stored procedure outputs to Kafka and consume outputs from Kafka to Clickhouse (Python)
- Created command line tool to suppress PagerDuty Alerts (Python)

Tesla *Data Analytics Intern*

August 2020 - December 2020
Fremont, CA

- Built ETL data pipeline for predictive analysis of job efficiency using historical weather patterns (Python, Pandas, SciKit-Learn, SQLAlchemy, SQL Server, MySQL, Ansible)
- Built dashboards to flag unusual install jobs, plan capacity, and visualize office jurisdiction (SQL Server, Tableau)
- Automated crew capacity modeling process (Python, Excel)

Roblox

Software Engineering Intern

June 2020 - August 2020

San Mateo, CA

- Built monitoring dashboard to track resource usage on container orchestration servers (Hashicorp Nomad), calculate waste, aid capacity planning (Docker, Go, Grafana, SQL Server)
- Built RESTful API on CI/CD with unit & integration testing (CircleCI)
- Open source project repo: https://github.com/Roblox/rblx_nurd

EDUCATION

University of California, Santa Barbara

Major: Computer Science, Minor: Statistics & Data Science

September 2018 - June 2022

GPA: 3.80/4.00

PROJECTS/RESEARCH

EMPTI

EMPTI (EMail Predictive Text Imitator) is a proof of concept platform used to measure and detect automation bias in the context of text based communication. Built with Express.js, Node.js, Postgres, and GPT-3. Repo: <https://github.com/austinmacmath/EMPTI>

Airbnb Machine Learning

Supervised machine learning to predict prices of Airbnb properties in New York. Random Forests, Bagged/Boosted Models, Radial/Polynomial Kernel SVM, KNN, Regularization, LDA/QDA, Models optimized with K-fold Cross Validation (R).

the drop. (2nd Place at SB Hacks 2019)

GPS location based scavenger hunt game for web, Android, and iOS. Implemented back-end database (Firestore), trigger functions (JavaScript), automated SMS system (Twilio API), scheduled releases (CRON).

Forest Fires Regression Analysis

Regression analysis of Forest Fires data set from UCI Machine Learning Repository. Stepwise regression, model fitting, model transformations, hypothesis testing (F-test, t-test), prediction intervals, residual/normality analysis (R).

Ceramic Classification & Data Cleaning

Classified ceramics based off of variables *Form* and *Group*. Ceramics with conflicting variables were sorted by other factors using machine learning random forests/decision trees (SciKit-Learn, Pandas).

Jar Analysis

In order to sort jars into narrow and wide groups based off of rim diameter and group number, R, Python (Seaborn, Pandas), and Microsoft Access were utilized to perform quantitative data analysis.

PUBLICATIONS

Mac, Austin R. "Don't Get Stuck." *Starting Lines*, 18th ed., Bedford Freeman & Worth, 2019, pp. 145-147.

VOLUNTEERING

UCSB Running Club - President

UCSB Running Club is an entirely student run organization with over 300 registered members. Our goal is to provide an inclusive, welcoming community for runners of all levels. I am responsible for delegating to other officers, organizing practice schedules, coordinating race carpools, applying for race registration discounts, purchasing uniforms, and other management tasks.

SKILLS

Languages

C++, Python, Go, SQL, R, HTML, CSS

Tools

L^AT_EX, Jira, Confluence, Sketch, Figma, Tableau, Git, Docker, Kubernetes