Joseph **Biggins**

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Education

Computer Science & Engineering, B.S.E. | Iowa City, IA

Aug. 2015 - May 2020

University of Iowa

- Big Data/Data Mining/Machine Learning, EFA
- CS Courses: Algorithms, Graph Algorithms and Combinatorial Optimization, Machine Learning, Data Visualization and Data Technologies
- Engineering Courses: Embedded Systems, Computer Architecture, Computer Networks

Experience

Engineer II, Intern | Elmhurst, IL

May 2019 - Aug. 2019

Mostardi-Platt

- Developed software to mitigate human input, and facilitate the execution of Method 5 testing; effectively automating particulate testing.
- Integrated negative feedback control loop that implemented the automation software with small, motor-driven valves to further automate the totality of isokinetic air emissions testing.
- Designed and developed first networked particulate train to control vitals and receive real-time test data while up to 750 feet away.
- Implemented several API microservices in Node.js Koa and in the serverless AWS Lambda functions.
- Projected the advent of the aforementioned innovations could lead to a 11.5% decrease in billable man-hours per year as well as an 22% decrease in calculate test error.

Options Trading Automation Intern | Chicago, IL

May 2018 - Aug. 2018

T.H. Brokerage

- Built and deployed overall service infrastructure utilizing Docker container, CircleCI, and several AWS stack(Including EC2, ECS, Route 53, S3, CloudFront, RDS, ElastiCache, IAM), focusing on high-availability, fault tolerance, and auto-scaling.
- Developed an easy-to-use Payment module which connects to major PG(Payment Gateway) companies in Hong Kong.
- Performed quantitative market analysis, and implemented ML algorithms to augment data collection effectiveness
- Deployed statistics and ML techniques to quantify opportunities and train models; evidence suggests the model yields a 63% +/- 7.5% accuracy rate predicting directional movements in S&P 500 levels.

Projects

SoundVillage Music Player

Lead Designer & Developer

- Designed cross-platform React-Native application to allow users to natively create, share, collaborate, and play real-time, dynamic playlists.
- Built up-vote and down-vote capabilities; automatically playing the song that had received the most votes next in the queue upon the previous songs completion
- Created full stack application to display current song and playlist on Raspberry Pi 3B+ microcontroller equipped with a LCD with touch capabilities
- Implemented numerous communication protocols, such as SFTP/FTP, Bluetooth, Wifi, DLNA, HTTP, FCM, etc. that stored and pulled critical data to and from Firebase database–complimenting the mobile application.

Home Automation Thermostat

Lead Designer & Developer

- Developed a UI for Web and Adafruit GFX touchscreen; providing user controls to customize system configurations for temperature, time, HVAC mode, HVAC status, and programmable set points.
- Implemented full stack solution using Node.js to create our server with Javascript and Jade comprising the client.
- Designed end-to-end noise filter; combining both hardware using capacitors and op-amps coupled software filtering capable of changing behavior based on the hardware's filtering performance

Autonomous Robotics Car

Project Manager & Lead Developer

- Designed and developed complete end-to-end intelligence and automation to execute driving instructions precisely, and efficiently during single lap race.
- Integrated optical sensors with proportional–integral–derivative feedback loop to determine the presence of the road, upcoming "stop signs", and the necessary speed of each wheel
- Implemented machine learning to optimize the proportional–integral–derivative controller to decrease single lap time; this led to 12% decrease time.