Joe Rickard

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PROJECTS

Linear Algebra Library: Over July/August of 2016, I wrote a C++ library to complete linear algebra functions for data analysis. While many already exist, I used this as an opportunity to further cement my understanding of the maths. With this Library I can take CSV inputs from a data set and end with node coordinates for use with the clustering algorithm of your choice. This allows a user to more easily visualize data similarity and distribution with a front end library such as D3.

Neural Networks: In 2016 I implemented the N.E.A.T. genetic machine learning algorithm whitepaper in C++. This was a good gateway for me to understand the delicate process of tuning a network, albeit an outdated design. Since then I have used NLTK for a number of projects, harnessing a convolutional network for semantic analysis of text. I used this library to achieve a second place award at HackCU 2016.

SQL Query Work: I've done freelance SQL Query production for a Boulder start-up aiding their new version release. This included writing new queries, updating old queries, and optimizing much of the existing code. This was done in mySQL. Since then, I have taken specialized courses in database design and optimization. The combination of these two have given me the skillset to confidently design a database from the ground up, or update a database to better meet current needs.

Block-Chain Work: Through November/December 2017 I have created the backend technology to allow ERC-20 token issues backed by portfolios of US securities. These are designed to be income-generating, having dividends payed to either wallets containing the token or to a bank account associated with a wallet through an internal exchange. The Etherium blockchain contracts, database, and payment systems are balanced to keep most computing costs off-chain and as inexpensive as possible.

COMPUTER SKILLS

Languages: C, C++, C#, Python, Bash, SQL, x86 Assembly
Github: /joerickard
Operating Systems: Ubuntu, Qubes, Mac OSX, Windows.

EXPERIENCE

Front-End Performance Work — The Trade Desk
5/17-8/17 — Boulder CO
At the trade desk I worked on their embedded pixel for customers sites, ensuring reasonably fast load times regardless of partner server outages. This work required extreme attention to edge case handling, as most of the errors my code resolved stemmed from rare conflicts with parter servers.

BLE and Language Model development — Toys2Life
10/16-6/17 — Boulder CO
I spent time working on an existing C# code base. This involved significant re-factoring and creation of new functionality. The product is custom BLE firmware, leveraged to gather relative location data of radios in our network. On top of this I developed language models to give nodes the ability to have contextually driven conversations with each other. I also developed some internal testing and development tools, as well as a graphical UI for internal content creation. These were also in C#.

EDUCATION

University of Colorado, Boulder, CO
Seeking Bachelors: Computer Science and Mathematics, expected Dec 2019
Notable Courses: Performant Linear Algebra, Computational Linear Algebra, Concurrent Programming, Data Analysis Algorithms, Database Systems