JULIAN CASTRENCE

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WORK EXPERIENCE

Cryptography Tutor | University of Maryland, College Park　　　　　　　　　　**Dec 2019 – Current**
- Guiding computer science students through the fundamental mathematics supporting modern and classic cryptography
- Teaching students how to implement cryptographic algorithms, perform cryptanalysis, and security best practices

Blockchain Developer | Freelance　　　　　　　　　　　　　　　　　　　　　**Sep 2019 – Current**
- Contributed to an open source technology, Proof Of Nearest, a new scalable consensus algorithm for blockchains
- Created a proposal for Asyagro to protect user identity by implementing stealth addresses and ring signatures
- Planned a lightning network protocol for Asyagro to connect farmers and insurers increasing transaction speed

Web Developer | Freelance　　　　　　　　　　　　　　　　　　　　　　　　**Dec 2018 – Feb 2019**
- Improved client relations by redesigning and improving UI/UX of Unique Sports Academy homepage
- Administered SEO tactics to increase monthly traffic of Unique Sports Academy homepage by an estimated 10%
- Created portfolio for UMD Smith School professional to amplify personal branding and marketing effectiveness

Software Developer and Data Science Intern | Grafiti　　　　　　　　　　　　**Jun 2018 – Sep 2018**
- Enhanced UI/UX through development of a responsive front-end using JavaScript, HTML, and CSS
- Worked with a development team to refractor an open source Python Script to web scrape Google Images
- Increased user base and user retention by improving website content ranking algorithm and front-end features
- Communicated directly with CEO and CTO, merged program modifications with development team using Git

PROJECTS

Cobble Wallet　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　**Current**
- Creating a Java Bitcoin wallet that generates cryptographically secure random Bitcoin private key / public key pairs
- Implementing wallet transferability through support of WIP importing and mnemonic seed phrases
- Protecting sensitive user information by using deterministic seed generation and encrypting private keys with AES
- Communicating with the Bitcoin network and broadcasting raw user transactions through the Blockchain API

Decentralized Crowdfunding Web / Mobile Application　　　　　　　　　　　　　**Current**
- Developing a scalable decentralized platform to deliver users an efficient peer-to-peer crowdfunding experience
- Securing application by connecting application to the Ethereum network using JavaScript, Web3, and Swift
- Writing smart contracts in Solidity to automate user transactions and eliminate server and database costs
- Supporting Model-View-Controller practices to maintain robust, reproducible, and readable software

Blockchain and Cryptocurrencies: A Data Science Tutorial　　　　　　　　　　　**Dec 2019**
- Composed a tutorial to guide readers through the data science lifecycle written in a Python Jupyter Notebook
- Gathered data using a BeautifulSoup web scraper and organized data using Pandas dataframes
- Conducted visual analysis on Bitcoin's blockchain, the top five cryptocurrencies, and trading indicator effectiveness
- Built a machine learning model using multiple linear regression and gradient descent to predict Bitcoin price data

BigCoin　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　**Nov 2019**
- Created a blockchain using JavaScript and Python based on original Bitcoin protocol for educational purposes
- Secured integrity of blockchain using SHA-256 hash algorithm and Secp256k1 elliptic curve cryptography
- Implemented generation of legitimate Bitcoin uncompressed and compressed public / private address pairs

EDUCATION

University of Maryland, *College Park, MD*　　　　　　　　　　　　　　　　　**Aug 2017 – May 2020**
B.S. in Computer Science, Data Science Specialization, Technology Entrepreneurship Minor
- Coursework included algorithms, data structures, programming languages, discrete mathematics, calculus, number theory, computer systems, object-oriented design, design patterns, probability and statistics, macroeconomics, fundamentals of technology startups, entrepreneurship, business ventures, cryptography, web development, mobile development, bioinformatics, computer architecture, artificial intelligence, data science, and machine learning
- Projects focused on understanding of sorting algorithms, search algorithms, foundational data structures, object-oriented design, Unix based environments, test-driven development, resource management, web development, mobile development, data science techniques, machine learning algorithms, and private key / public key cryptography

TECHNOLOGIES

- Proficient: C, Java, JavaScript, Python | Docker, Git, HTML / CSS, Jupyter, Node, React, Unix
- Familiar: AVR Assembly, C++, C#, MATLAB, OCaml, Ruby, Rust, Solidity, Swift | Express, MongoDB, SQL, Truffle, Web3