

David P. Lopez

Miami, FL

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Results driven engineer with an ability to apply strong analytical skills under pressure when undertaking complex assignments to meet tight deadlines while operating with a deep awareness of the bottom line. I am a considerate team member & an active listener who can empathize with others to help build winning teams while working to use my expertise & passion for Mathematics & Computer Science to develop solutions related to software engineering, embedded systems, machine learning, artificial intelligence, & cyber security.

Licenses, Certifications, & Technical Skills

Programming Languages: C++, Java, Python, JavaScript, jQuery, Objective-C

Web Technologies: React.js, Node.js, Express.js, AJAX, JSON, XML, HTML, & CSS

IDEs & Dev Tools: SublimeText3, XCode, NetBeans, Eclipse, Android Studio, QT, SoapUI

Version Control Systems: Git

Data Science Tools: TensorFlow, Numpy, Pandas, SciKit-Learn, Seaborn, IPython, Matplotlib

Databases: MySQL, PostgreSQL, SQLite, DynamoDB (NoSQL)

CRM Systems: NetSuite, SuiteScript, Microsoft Dynamics, Salesforce

CAD Systems/3D Modeling: AutoCAD, Fusion360, AutoDesk Education Expert

Hardware: Raspberry Pi, Arduino

Operating Systems: CentOS, Scientific Linux, Windows, RobotOS

Cloud Infrastructure: AWS Serverless (Cognito, Lambda, CodeBuild, CodeDeploy, & CodePipeline)

UX/UI Tools: Adobe XD, Photoshop, Spark, Animate

Languages: English, Spanish, Portuguese

Projects

Houston, TX

CFS Command & Data Dictionary Viewer/GUI

2017

- Developed a Web-based application that interacts with a PostgreSQL database (the CCDD), to allow users to securely analyze robotics, spacecraft command & telemetry data in the CDD (without requiring them to have training on PostgreSQL itself).
- Developed a scalable backend using Node.js, & Express.js utilizing an MVC Architecture for deployment to additional servers for use by the Orion AA2 team members by following a REST architecture for optimal software reuse.
- Built an authentication system to allow for multiple users on the application, a Bug Tracking database in PostgreSQL & supplying an API to persist data for the project.
- Completed error checking & debugging of over 10,000 lines of code to ensure the quality of the project requirements to deploy an application that met the quality standards of the Orion AA2 team.

Miami, FL

SeaBots Augmented Reality Network

2017

- Completed the 3D Modeling, 3D Printing, & Engineering of a network of ROV's & Semi-Submersibles that are capable of cleaning plastic particulates from the ocean & recovering crude oil from the surface of the ocean in Fusion360.
- Developed an iOS Augmented Reality gaming prototype that allows users to control & engage with the submersibles to provide a platform that allows users to participate in the cleanup & mitigation of large scale global disasters.
- Developed a web site at www.SeaBots.tech to crowd fund the project to raise money for the complete development of the project beyond the prototype phase.

Open Source Innovations & Publications

Houston, TX

National Aeronautics & Space Administration (NASA)

August 2017

eNTR: 1499100524

- The vision for the CCDD Web Utility is for it to be released as an Open Source project alongside the Core Flight Software CDD as a member of the Core Flight Software Tool Suite. The CCDD Web Utility will be useful to any CFS project that decides to use the CCDD tool even if it is not a CFS project. Because of the configurability and extensibility, it can be used abstractly by any project team requiring distributed access to persistent data contained inside a CCDD project database.

Miami, FL

MDC STEM Research Institute

September 2018

US Dept of Education & National Science Foundation Grant

A Machine Learning Model using Python & Tensorflow to Describe the Market Price of Digital Currencies: The Case of Bitcoin.

ABSTRACT (Condensed):

An implementation of a Machine Learning model using TensorFlow to describe the price of Bitcoin. The study quantified 30 predictors to develop a multiple linear regression to predict the market price of Bitcoin. The model observed daily pricing and feature data to answer the question: which predictors have a significant impact on the price of Bitcoin? Consisting of 2,912 observations the model explained 77.2% percent of the variation of the response variable. The model suggested that the features associated with market demand, number of transactions, transaction confirmation times, transaction USD volume, and market demand measured using Google Search Trends data, account for the prices observed in the Bitcoin markets today.

Experience

Miami, FL

SpecTruMetRx

January 2019 – Present

Software Architect

- Leading software architecture, design, engineering, & implementation for SpecTruMetRx, Inc. Conceived, managed, and built B2B-facing, privacy-first medical payments service. Architected & implemented a horizontally scalable, distributed cloud service platform.
- Developing a Progressive Web Application (PWA) and implementing a microservices based backend architecture with an AWS Aurora (PostgreSQL Instance), DynamoDB, AWS Lambda Serverless, ReactJS, & NodeJS technology stack to process B2B Digital Medical claims & payments on a private Blockchain.
- Designed platform data model to 3NF & currently implementing data stores in DynamoDB & PostgreSQL to persist encrypted data to a data warehouse that will include data to support multiple entities across the enterprise on both reporting and predictive analysis.

Miami, FL

PayCargo

August 2018 – December 2018

Software Engineering Contractor

- Secured payments network from attack and implemented CyberSecurity controls to proactively mitigate against existing threats. Redeployed live application using AWS AMI Linux instances to ensure continuity of enterprise level systems in production.
- Configured CI/CD workflows to automate development & production deployment activities using AWS CodeDeploy & CodePipeline.
- System Architect for Blockchain solution & proof of concept needed for the design of a private node used for confirming international transactions enabled by the PayCargo Fx solution.
- Created corporate management controls & InfoSec policies to prevent further unauthorized access to payment systems while managing engineering teams to report work in place statuses to executive team & 3rd-party technology auditors.
- Implemented SAML 2.0 SSO authentication mechanism to enable secure system access for FedEx employees using the platform to track cargo payments & transactions accounted for by the network.

Miami, FL

Visa Latin America

November 2017 – October 2018

Technical Product Manager

- Subject Matter Expert (SME) for Visa Token Service Cloud Based Cryptographic Payment Platform.
- Responsible for the implementation and integration of Token Requestor-TSP and Issuer-TSP cloud-based payment platforms with issuing banks and technology solution providers across Latin America and Europe.
- Completing the functional testing of Google Android Host Card Emulation (HCE) enabled payments consuming Visa Token Service API's using symmetric and asymmetric encryption techniques.
- Building DevOps automation tools in Salesforce and JavaScript that improve the efficiency of the Visa Token Service Integration team.

Miami, FL

MDC STEM Research Institute

April 2018 – September 2018

Research Fellow

- MDC STEM Research Institute Machine Learning Research - Preprocessing, Modeling, Learning/Training, and Predictions in ML: Pandas, Numpy, Theano, Keras, SKLearn, TensorFlow.
- Mathematics research fellow using Machine Learning techniques to model the market of cryptocurrencies to better describe their prices using Python.
- A Machine Learning Model using TensorFlow to Describe the Market Price of Cryptocurrencies: The Case of Bitcoin.
- <http://davidplopez.com/ai.html>

Houston, TX

National Aeronautics & Space Administration (NASA)

June 2017 – September 2017

Software Engineering

- Designed a Graphical User Interface (GUI) to interact with the CFS Command & Data Dictionary (CCDD), a comprehensive definition of all command & telemetry data used by NASA spacecraft and robotic systems to allow users to intuitively navigate mission critical information.
- Provided a common method of analyzing critical flight data in the CCDD, as well as a method of generating the ".h" & ".rec" files from the CDD that directly benefits current & future NASA projects by providing an abstract method of accessing command & telemetry data.
- Developed integrated documentation and a bug tracking database in PostgreSQL to effectively communicate issues in real-time.
- Built a secure application that eliminates vulnerabilities to cyber-attacks by implementing features that use process arguments to define environment variables via the Linux command line instead of in the source code itself.

Experience

Miami, FL

Uribe Construction, Inc

April 2014 – January 2017

Superintendent/Software Engineer

- Supervised teams of more than 50 tradespeople to construct new ground up facilities & renovation projects throughout the Miami area & designed & developed technology solutions to provide advanced solutions for the construction industry.
- Developed IoT time tracking devices on the Arduino platform using C, that were installed in the team's hard hats, to allow the management staff to employ precise time controls which helped to reduce costs by \$1500 per week.
- Developed a web application that allows the accounting department to communicate with the field staff to determine WIP that must be billed in Real Time using NetSuite (SuiteScript JS Library), HTML, & CSS.

Miami, FL

LCM Group, Inc.

October 2008 – March 2014

Project Manager/General Contractor

- Developed business rules, technical requirements, and business logic for all database systems used by the company to manage, track and record the workflow processes that the company needed to maintain profitability & accountability inside of NetSuite CRM using SuiteScript (JavaScript).
- Successfully designed, engineered, & built the first LEED-certified home to be approved by the Miami-Dade County Building Department as a self-sustainable, environmentally efficient building that produced its own electricity, collected its own rainwater, & recycled its own gray water.
- Wrote software algorithms & built database systems for the existing estimating department that enabled our estimators to work more efficiently & produce more accurate work, which minimized cost overruns on jobs that we were awarded by 5%.

Miami, FL

Island Building Supply, Inc.

June 2004 – September 2008

Operations/Purchasing Manager

- Implemented & customized the NetSuite CRM Suite which included a product database of over 2,000 products using custom pricing matrices, payroll & accounting modules, & an e-commerce portal with an integrated merchant account processor using NetSuite SuiteScript (JavaScript).
- Developed custom estimating applications & data models to automate our pricing procedures & to shorten the learning curve for all new hires in the estimating department by building in-house software using C++ & MySQL in QT.
- Implemented a semi-autonomous rebar fabrication facility using aSa software utilities reducing labor costs by \$25,000 per month. Ensured the sustainability of the operation and trained all new hires in the operation of all autonomous equipment.

Miami, FL

Turner Construction Company

April 2002 – May 2004

Field Engineer/Assistant Superintendent

- Implemented, & customized \$3mn project management software & databases to manage & control the project workflow by leveraging my understanding of technology to maintain the digital resources of the company.
- Supervised the construction of the Miami International Airport 745B Project: 4-story construction contract to build Terminal B & C valued at \$250,000,000.
- Planned & Coordinated the daily construction operations & acquired the necessary skills as a construction professional to become licensed as a General Contractor in the State of Florida.

Miami, FL

Sage Payments & First Data Merchant Solutions

April 2002 – December 2017

ISO Merchant Services

- Opened merchant service agreements & maintain a portfolio of active relationships with 25 retail establishments in the Miami market that produce an average of \$100,000 in revenue every month.
- Connected secure point of sale device hardware and web-based payment solutions in NodeJS, JavaScript, HTML, & CSS for each account to ensure services were established with no down time for each merchant.
- Reviewed & analyzed merchant account statements & activity to ensure sustainable services were provided to all accounts based on each merchant's individual need.
- Assisted portfolio of merchant account customers in maintaining regular PCI Compliance to ensure against Credit Card & Merchant fraud as required by all merchant account agreements.

Education

Miami Dade College

A.S. Computer Programming: Mobile Application Development

- Related Courses: Objective-C, C++, Java, iOS & Android Development, & MySQL

A.A. Physics

- Related Courses: Calculus I,II,III, Physics, Statistics, Economics

Miami Dade College

B.S. Computer Engineering

- Concentrations: Embedded Systems & Network Forensics & Security
- Minors: Physics, Robotics & Mechatronics
- Minimal course work needed for completion