www.ajfederici.com
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ALEXANDER J. FEDERICI

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EMPLOYMENT

Quantitative Trading Intern　　　**TransMarket Group, Chicago, IL**　　　**November 2017 - Present**

- Created a predictive model for off-the-run 3s5s US bonds using principal component analysis and regression tools within the Python Scikitlearn library. Determined meaningfulness of data by using random forest regression.
- Utilized data analytics and visualizations via Numpy, Pandas, and MatPlotLib to determine optimal machine learning model features.
- Wrote a script to update the company databases with improved data formats and to send weekly email updates.

Technology Developer　　　**Flameless, Aurora, IL**　　　**September 2017 - Present**

- One of three founding members of this safety product startup based in IN2, an innovation center in Aurora, IL.
- 2nd place at PowerPitch and 3rd place at Next Launch, both pitching competitions, for the novel idea and prototype.
- Wrote code in C, utilizing Arduinos and custom parts, to create a miniature device that extinguishes home fires.

PROJECTS

- **Autonomous Cognitive Assistant**. Worked with Convolutional Neural networks and the dlib library in Python to create facial recognition software for accessing the Amazon Alexa. Implemented the Chinese-Whispers algorithm to classify images by the people present within them. Built a database class and used natural language processing to scrape news articles based on the users' preferences.
- **Personal Website in HTML/CSS**. Used JavaScript to build a double pendulum application within the site as well as to handle custom functions, such as updating when the page was last edited. Used PHP in conjunction with HTML to create a working contact form that sends information through an SMTP server.
- **C++ Tower Defense Game**. Acquired code organization skills by using appropriate design patterns for OOP. Wrote approximately 4000 lines of code with my team. Used Direct2D API to develop a graphics library for the program. Created a path finding intelligence for both the enemies and defensive units.
- **Python Trading Bot**. Created a crypto currency and stock trading bot that fetches live feed data from various websites by parsing html code. Used Amazon Relational Database services to create and connect to a MySQL database instance to query and modify data using Python (mysql.connector and sqlalchemy). Created an implementation of volume analysis and have written simple technical indicators such as moving averages and RSI as plotting add-ons. Currently implementing a Support Vector Machine Model for making trade decisions.
- **GitHub Project Contributor**. Helped create a free resource for learning the basics of Python, and actively contribute to a pure Python neural network library based on Tensors for rapid prototyping with minimal dependencies. Learned best practices for documentation through open-source development.

EDUCATION

- **University of Illinois Urbana-Champaign --** Beginning Fall 2018 as a Computer Science(ENG) Major
- **Illinois Mathematics and Science Academy (Aurora, IL)** -- Fall 2015 - May 2018
- **MIT EDx --** Introduction to Algorithms, CogWorks Machine Learning Program

ADDITIONAL EXPERIENCE AND AWARDS

#1 Midwest Team, Cyber Forensics: Invited to compete nationally in NYU's High School Forensics Challenge
Google Foobar Challenge: Reached stage 3/5 on Google's invitation based coding competition
DRW Data Science Finalist: Placed in the top 5 out of 83 competitors on the competitive coding site, Camelot.ai
2nd Place at MIT BWSI Showcase: Implemented voice and face recognition on the Amazon Alexa
IHSA State Chess Champion: 2017 Illinois Math & Science Academy Chess Team
National Merit Commended Scholar; **AP Scholar with Distinction**; **Illinois State Scholar**

LANGUAGES AND TECHNOLOGIES

Python; C++; Java; C#; JavaScript; PHP; MySQL; HTML/CSS
Amazon Web Services; Git Bash; GitHub; Microsoft Office; Paint.net

INTERESTS/HOBBIES

Machine Learning, Software Development, Trading/Cryptocurrency, Data Analytics, Chess, Piano, Basketball