HEMANTO BAIRAGI

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SUMMARY

- Software Engineering specializing in Machine Learning, Artificial Intelligence & Python development.
- Transitioned from Physics, to Financial Physics and Engineering to Software Engineering professionally.
- GitHub Link: https://github.com/Orko24
- LinkedIn Link: https://www.linkedin.com/in/hemanto-bairagi-865027101/

SKILLS

- Software Engineering & Software Development.
- Python Programming & Machine Learning.
- Databases Development.
- DevOps & DevSecOps.
- Data Science & Analysis.
- Algorithm Development.

EXPERIENCE

Lead Software Engineer and Software Architect — Jan 2022 to present
IBM Startup Partner Program; Adamas Audio:

- Role was to design, develop, produce, deploy code for Adamas Audio. Currently running ongoing postproduction support.
- Adamas Audio was developed in an integrated testing environment on Google Cloud. Manual Automated tests, and performance benchmarks had to be written and integrated into the software development lifecycle to ensure optimal performance upon deployment.
- Skills gained: Python, Java, Machine Learning, Artificial Intelligence, Machine Learning Libraries like Keras, PyTorch, Tensorflow, Sci-kit Learn, Pandas, Numpy, etc. API development, Frontend: HTML, CSS, JavaScript, Node.js, ETL software. Programming Languages like: Python, Java, C++, C#, C, Golang, MATLAB, Mathematica, SQL. Site Operation Management, DNS, Domain Transfer, Site Migration, Cloud Computing, Django, Flask, Redis & Celery data development and integration. Relational Database utilization and management like MySQL & MS SQL Server, PostgreSQL. WebSocket programming to connect Redis servers to Django Middleware. Linux, Bash Script, Git, GitHub, GitOps, Cryptography, SSL & Cyber Security, HTTP, HTTPS, TCP/IP, Data Analysis & Data Science.
- Recently Site Operations Management and Migration was performed on the site to migrate the web application from Liquid-web dedicated servers to IBM Bare-metal Servers.
- Service went down April 14th due to cost, have been approved by IBM's partner program and am currently receiving $3000 USD for 6 months in funding starting May 1st.
- Postproduction updates written in Golang, Java and C++ to ensure scalability and patentability when profitable, are being applied. Update and update progress hosted in this GitHub repository, and will be free and open source: https://github.com/Orko24/FFMPEG_Golang_replacement
- The purpose of Adamas Audio was to allow customers to create custom audiobooks at scale. It is currently hosted at: https://www.adamasaudio.com. Full article detailing it can be found https://adamas-audio.medium.com/adamas-audio-machine-learning-and-web-development-to-produce-cheap-audiobooks-and-voice-cloning-a05608e4485f.
- The components of Adamas Audio were Frontend REST APIs, client data management system, Backend Data Deriving API's, Django Middleware. These components were developed in a Test-driven environment using agile methodology.
- Frontend REST API was coded in HTML, CSS, JavaScript. Initialized frontend of the data pipeline. Django Middleware integrated data pipeline from frontend to backend. Backend data processing APIs built in Python, C++, C#, C, Java, Golang, SQL. Client database management system doubled up as a data governance policy, to allow security at scale.
- Integrated frontend to backend data pipeline allowed derived datasets and data products per client API request to be created and passed from server to client via the pipeline built through Django Middleware.

- Data products were built using Machine Learning libraries like: Pytorch, Tensorflow, Keras, Scikit-learn, Pandas, Numpy, etc.
- APIs were tested using PyUnit Testing framework (https://docs.python.org/3/library/unittest.html) to ensure functionality and scalability upon software integration and production.
- Adamas Audio was hosted using Apache, Apache server instance templates written in C/C++ are given here: https://github.com/Orko24/Apache_django_ssl_web_integration
- SSL certificates were integrated into a DNS to Apache pipeline. This allowed HTTPS technology to encrypt all web traffic per client API request. Django-RQ, SQL and Redis were utilized to ensure all client requests run asynchronously per request at scale.

Quant-connect June 2020 to Jan 2022

Algorithmic Trader June 2020 to Jan 2022

- Made the transition from Physics to Financial Physics and Financial Engineering. Allowed the gaining of experience in Financial Engineering, Software Development and Algorithm Development.
- Algorithms were developed in Python.
- Utilized Data Visualization Libraries like Matplotlib, Seaborn, and Pandas to visualize, present and analyze trading data.
- Machine Learning Libraries like Tensorflow, Keras, SciKit-Learn, were utilized to identify patterns within trading data. This was done to create predictive analytics regarding share and commodity prices.
- The lean trading engine Framework was utilized for live trading and back testing of Algorithms: https://www.lean.io/#topic100.html.
- Scanning Software to perform analysis on but not limited to trading volume, outstanding share volume, news feeds regarding trading catalysts and trading sentiment. The data generated was integrated into machine learning predictive system to produce a scoring system, to create buy/sell signals for equities and commodities.

Undergraduate Researcher Sept 2019 to June 2020

University of Calgary

- Gained strong analytical and problem-solving skills, with the ability to multitask in a fast-paced environment with changing priorities.
- Utilized C++/C to program an Arduino to track photons emitted from experimental green laser.
- Experience utilizing programming languages like Python, C++, C, Mathematica, and MATLAB in a professional research setting.
- Thesis given in this GitHub repository: https://github.com/Orko24/ODMR_thesis/blob/master/Hemanto_Bairagi_Final_Report_Draft_3%20(1).pdf
- Link verifying research: http://quantumalberta.ca/wp-content/uploads/2020/12/IQST-2020-Report.pdf
- ODMR thesis: Worked on building a building an optically detected magnetic resonance (ODMR) microscope, with the intent of mind to use qubits to produce nanoscale imagery and video.

EDUCATION & TRAINING

Bachelor of Science: Astrophysics
University of Calgary
Calgary, AB
From Sept 2016 to Feb 2021

- Achieved Honors
- Dean's List Honoree [2020]
- GPA: 3.5/4.0

Bachelor of Science: Physics
University of Calgary
From Sept 2016 to Feb 2021

- Achieved Honors
- Dean's List Honoree [2020]
- GPA: 3.5/4.0