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/
- Portfolio Link: https://github.com/Orko24/Portfolio_Hemanto_Bairagi/blob/master/Portfolio.pdf
- Specializes in Python, C/C++, Go / Golang programming languages, and SQL.

SKILLS

- Software Engineering, Software Development, Data Science, Quantitative Analysis, Python Programming, Machine Learning, DevOps, DevSecOps & Database Development,
- Application, Web Application Development, & Algorithm Development.

TECHNICAL SKILLSET

- High level understanding and experience of software development, DevOps principles and practices, Implementing AI and Machine learning solutions into web and data applications to produce scalable robust software.
- Expert in Python programming language. Proficient in C++, C, C#, MATLAB, Mathematica, Java, Golang.
- Back-end Machine Learning and Data Science integration experience in Pytorch, Tensorflow, Keras, Scikit-learn, Pandas, Numpy, etc, as well as corporate custom API's.
- Frontend development Experience highlights: HTML, CSS, JavaScript, Node.js. ETL software development experience.
- Data Analysis experience, Modeling and Simulation.
- Data pipelines were constructed using Frontend and Backend technologies to facilitate rapid data fabric integration between user REST API's and backend Data Derivative API's.
- Data scrapping capacities API's were constructed using ETL methods to facilitate quick derivative data generation to facilitate create of data products.
- Involved in coding machine learning models and various algorithms adding to LLM structure.
- Experienced in developing code prompts using a variety of languages such as SQL, Golang, C++, and Java.
- Experienced using SQL to create databases in SQLite, BigQuery, PostgreSQL and MongoDB databases.
- Experienced in creating a variety of web applications that use machine learning to predict trends. These applications include Machine learning applications used to predict, Orbital mechanics for satellites, soil quality, weather predictions, SEC web scrapping, plant feasibility, and fossil identification and financial software.
- Site Operations Management, such as Site Migration, Domain transfer and Network Engineering.
- Experienced in Cloud Computing
- Experienced in web development frameworks: Python-Django, Python-Flask, Django, Flask
- Celery Database, Redis Database, Data pipeline integration experience.
- SQL database development and integration with python data pipeline.
- Linux, Bash Script, GitBash, Git CLI, Windows Server development, Apache Web-server development, integration, and deployment.

- LLM (Large Language Model) development experience. In this experience I trained LLM models by exposing ScaleAI's to different prompts and coding scenarios.
- Experience creating applications that use web scrapping to gather data for data analysis in an automated data pipeline, to interface with Machine Learning applications.
- Skills gained and refined: Python, Golang, SQLite, PostgreSQL, Google BigQuery, Java, C++, C, JavaScript, TypeScript, Dart, HTML, CSS, Prompt Engineering, LLM (Language Learning Model), Database Engineering, Software Quality Assurance, Machine Learning, Artificial Intelligence, ChatGPT, OpenAI.
- Machine Learning skills frameworks developed and specialized in: PyTorch, Keras, TensorFlow, and Spacy.
- Example project of a stock bot that uses machine learning to generate price predictions using security data is given here: https://github.com/Orko24/Vhagar_Development_Repository .
- Experience using Google Cloud and Windows Cloud Servers, DNS, VPN, Firewalls, gateways, TCP/IP and socket programming.
- Quantitative Trading Algorithmic framework experience: Lean Engine.
- Technical Fields : Quantum Physics, Statistical Mechanics, Astrophysics.
- Agile Development Cycle.
- Financial knowledge regarding public and private equity valuations.

EXPERIENCE

Scale AI: Remote Tasks. Jan 2024 to present

AI Consultant:

- The role is to design, evaluate and ensure quality about LLM (Large Language Model) performance.
- Skills gained and refined: Python, Golang, SQLite, PostgreSQL, Google BigQuery, Java, C++, C, JavaScript, TypeScript, Dart, HTML, CSS, Prompt Engineering, LLM (Language Learning Model), Database Engineering, Software Quality Assurance, Machine Learning, Artificial Intelligence, ChatGPT, OpenAI.
- Machine Learning skills frameworks developed and specialized in: PyTorch, Keras, TensorFlow, and Spacy.
- Example project of a stock bot that uses machine learning to generate price predictions using security data is given here: https://github.com/Orko24/Vhagar_Development_Repository .
- The prompts using LLM were designed with machine learning software for insights into finance, astrophysics, orbital mechanics, agriculture feasibility studies, image recognition systems, and fossil identification systems.
- Experience building database queries, reviewing, debugging, and deploying in Big Querry, PostgreSQL, and SQLite. Experience in developing, debugging, and assessing the quality of code programs in Python, Golang, SQL, Java, and C++.
- Experience building machine learning programs to analyze data sets and produce prediction results through a data pipeline. These programs utilize models based on the Keras, Tensorflow, Sci-Kit Learn, and PyTorch Python libraries.

IBM Startup Partner Program; Adamas Audio Jan 2022 to Jan 2024

Lead Software Engineer and Software Architect:

- Role was to design, develop, produce, deploy code for Adamas Audio. Currently running ongoing postproduction support.
- Code was developed in a test-driven agile environment, where discussions on code implementation, testing and software architecture were facilitated. IBM Cloud support team was heavily involved in web application deployment to resolve any design and coding issues.
- 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 (Microsoft Azure, AWS and GC), Django, Flask, Redis & Celery data development and integration. Linux, Bash Script, Git, GitHub, GitOps, Cryptography, SSL & Cyber Security, Data Analysis & Data Science.
- The site was migrated from Google Cloud to Liquid web to IBM Cloud bare metal traditional 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: 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.
- 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 integrated into DNS Apache pipeline, allowing HTTPS technology to encrypt all web traffic to and from the server per API client request.

Quant-connect June 2020 to Jan 2022

Algorithmic Trader

- 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 designed around Industry selection like Technology (Artificial Intelligence and Semiconductors) and Pharmaceuticals.
- Algorithms were developed in Python.
- 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 a machine

learning predictive system to produce a scoring system, to create buy/sell signals for equities and commodities.

- Quantitative Research indicated factors that need to be studied for alpha generation include but are not limited to, company management, market sentiment, company fundamentals (dilution history & capital management), corporate culture & adaptability, macro-economic factors.
- Tactically short to long term trading signals utilized in conjunction with machine learning models to generate buy/sell signals based on trading signals to generate alpha.

University of Calgary Sept 2019 to June 2020
Undergraduate Researcher

- 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: https://iqst.ucalgary.ca/sites/default/files/teams/1/IQSTReport20192020.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

REFERENCES CAN BE PROVIDED UPON REQUEST

- https://www.linkedin.com/in/paul-barclay-648a1531/
- https://www.linkedin.com/in/jason-donev-76659922/
- https://www.linkedin.com/in/sstotyn/
- https://www.linkedin.com/in/j%C3%B6rn-davidsen-420a8b22/