

Bharathkumar Ayyadurai

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Summary

Experienced Python engineer with over 3 years of tenure, specializing in full-stack development, meticulous API design, and effective cloud orchestration. Proficient in renowned frameworks such as Django REST, FastAPI, Node.js with Express.js, and skilled in database management encompassing PostgreSQL and NoSQL. Adept at crafting dynamic user interfaces utilizing React. Profound competence extends to async programming, multithreading, and parallelism. Accomplished in NLP model optimization, ML pipeline construction, and adept analysis of time series data. Demonstrated expertise in establishing robust CI/CD systems, overseeing Kubernetes deployments, and effective infrastructure management via Terraform and Ansible, while staying attuned to evolving technological advancements.

Experience

Full stack Python developer

01/2022-07/2023

Techy Geeks IT

- Designed and built scalable cloud-based web platforms for inventory management using Python, **Django**, **PostgreSQL**, **FastAPIs**, and **AWS** services.
- Led the development of a robust MOOC platform web application utilizing Python frameworks Django and FastAPI for the backend API and business logic. Implemented optimized **PostgreSQL** database schema and designed **responsive frontends** with HTML, CSS, **Bootstrap**.
- Architected CI/CD with Jenkins & Ansible, leveraging Docker/Kubernetes for containerization. Automated testing & development, yielding notable efficiency gains.
- Implemented best practices including **TDD**, **OAuth** authentication,
- Optimized performance of cloud-based web platforms and APIs by implementing **Redis caching**, performed load balancing and auto-scaling groups of Gunicorn **WSGI** servers.
- Leveraged AWS managed services including **EC2** for compute, **RDS** for database, and **S3** for storage. Reduced infrastructure costs by 45%.

Research and Development Engineer

05/2019 – 08/2020

Integra Software Services Private Limited

Pondicherry, India

- Developed a website using the **Django** framework to host a web-scraping **NLP** bot. Utilized Python's **BeautifulSoup** and **Selenium** to extract text data from multiple sources. Cleaned the extracted data using Python before loading it into **PostgreSQL** on the **Azure cloud platform**.
- completed a individual portfolio optimization project utilizing **NumPy** and **Pandas** to calculate portfolio metrics like expected returns, volatility, and Sharpe ratios.
- For portfolio optimization, applied **mean-variance optimization** techniques using **SciPy** library. also integrated risk management methods including VaR using **Monte Carlo simulation** and CVaR using quantile regression in **StatsModels**.
- For **backtesting**, built a trading simulator to generate out-of-sample performance metrics.
- Implemented **time series analysis** (STL, SARIMA) to identify seasonal patterns in energy usage. performed **anomaly detection** to identify irregular energy consumption from the raw data of IOT sensors from energy meter.
- Utilized **clustering** (K-Means) for segmenting buildings based on energy consumption

Intern

11/2017 – 12/2018

HashInclude Computech Private Limited

Bangalore, India

- Architected responsive redesign using **React** framework for modular frontend and **Node.js** scalable backend. Increased organic traffic 20% by optimism **SEO**.
- Built a performant backend with **Express framework**. Integrated **MongoDB** improving data flexibility.
- Developed interactive UI with **vanilla JavaScript** and CSS animations, improving UX.
- Developed scalable web scraping application in **Python**; engineered robust scrapers leveraging **Selenium**, **multithreading**, **asynchronous requests**, regex, and CSS selectors to rapidly extract data from websites.

Education

Global Certificate in Data Science & AI -INSAID(Diploma) 03/2022-12/2022

Modules Learned:-Python, Data Analysis, Tableau, ML, OpenCV, NLP, Tensorflow and DeepLearning,

Projects done: Sales Forecasting, genetic variant classification, Analysis of HMDA data

Master's in Big Data and High-performance Computing 09/2020- 11/2021

University of Liverpool

Liverpool

Modules Learned:Big data analytic, Optimization, Data mining and visualization, Machine learning

Projects done:Developed CNN model for bio-energy source identification and comparing ML techniques.

Bachelor's in Computer science 05/2015- 04/2019

S.R.M University

Chennai, India

Modules learned : Oops, Database management, cloud computing, web development

Project done: Built smart camera monitoring system using CNNs in OpenCV Python.

Skills

Programming Languages:	Python, R, JavaScript
Analytics & ML:	Pandas, NumPy, SciPy, StatsModels, Scikit-Learn, NLP, OpenCV, Time-series analysis, Anomaly detection
Database:	PostgreSQL, MySQL, Sqlite, MongoDB
CI/CD:	GitHub, Jenkins, Docker, Kubernetes, Ansible, Terraform
Testing:	Python unit test, TDD, Integration Testing
Cloud:	Azure: App Service, AKS, Data Factory, Cosmos DB, Blob Storage, gen2, Cognitive Services, Databricks AWS: EC2, EB, RDS, DynamoDB, S3, SageMaker, CloudFront
Front-end Development:	HTML, CSS, JavaScript
Frameworks:	Django, FastAPI, Express.js, Bootstrap, TailwindCSS
Web Scraping:	Selenium, BeautifulSoup, Xpath
Web Technologies Concepts:	REST APIs, Responsive Design, MVC Patterns, JSON, YAML, OAuth
Server Tech:	Gunicorn, WSGI, Apache Web Server

Other technical skills

- Developed a real-time Python trading bot with technical indicators for trading decision-making
- Interning as a Content Writer and updating the organization website
- Had hands-on experience with geo-spatial analytic using ArcGis and processed USGS data.

Certifications

- Machine Learning: Stanford
- IBM Data Science Specialization
- Microsoft Certified: Azure Data Engineer Associate(DP-203)

Portfolio

- **Linkedin Profile:** <https://www.linkedin.com/in/bharath-kumar-ayyadurai-612607158/>
- **GitHub Profile:** <https://github.com/Bharathkumar2704>
- **Portfolio:** <https://bharathkumar2704.github.io/Portfolio/>
- **Kaggle:** <https://www.kaggle.com/bharath2704>