Harsh Avinash
Data Science Engineer/ Product Manager

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Experience

Motorq / Data Scientist
JANUARY 2024 – PRESENT, BANGLORE

- Part of the 5 member Data Science team, lead 3 complete customer facing projects, primary data scientist on fuel calibration efforts accounting for 29% of the company's current ARR.
- Lead Gen AI initiatives, including 2 customer facing chat-bots with specialized use cases, resulting in a ~30% reduction in customer questions/ complains that were initially handled manually.
- Worked on Motorq's Synthetic Data Simulation platform using Tra.ci and Sumo, potentially reduced internal testing time by 75% and halving customer onboarding timelines.
- Managed 3 Interns over 1.5 years to close 5+ internal projects.

OptIQ.Ai / Lead ML Engineer
OCTOBER 2023 – JANUARY 2024, BANGLORE

- Joined as the sole member of the ML AI Team, filling in for a senior's absence due to a personal commitment.
- Wrote fundamental AI based logic for PII Detection and Masking for static/dynamic data and LLM prompt security.
- Maintained customer facing APIs and evaluation metrics for the same.
- Modularization the data pipeline such that the logic can be used by various different cloud platforms. (AWS, Azure, GCP, Equinox).
- Worked with the founding team directly, was involved in customer interactions and project budgeting.

Indian Institute of Technology, Delhi / Research Fellow
MAY 2023 – JULY 2023, HAUZ KHAS, DELHI

- Worked under Dr. Mannan Suri, PM Modi's professor delegate, focusing on local Large Language Models (LLMs).
- Developed custom logic for quantization, leading to the creation of a specialized quantizer for IIT's specific needs.
- Engaged with state-of-the-art architectures, deepening expertise in local LLMs fundamental creation & operation.
- Co-authored a research paper analysing computational availability, LLM utilization, and performance variations in CPU-based models.

Association for Computing Machinery, VIT / Chairperson
MARCH 2022 – SEPTEMBER 2023, VELLORE

- Served as the chairperson, overseeing the technical, managerial, and design teams. My leadership ensured cohesive coordination, fostering a productive work environment.
- Pioneered and executed several initiatives, notably the organization of hackathons and competitive coding events that drew participants from diverse backgrounds, enhancing the organization's reputation.
- Initiated and managed community service programs, specifically designed to teach computer skills to underprivileged children, reflecting our commitment to social responsibility.

Cypherock Wallet / Product Manager & Data Analyst Intern
JUNE 2022 – AUGUST 2022, GURGAON [REMOTE]

- Led the formulation of a data-centric customer acquisition strategy, aligning closely with product development cycles.
- Conducted comprehensive market research, playing a crucial role in product feature evolution and adaptation.
- Spearheaded data analytics initiatives, providing actionable insights for product development and marketing strategies.

Sutherland Global / Data Science Intern
SEPTEMBER 2022 – DECEMBER 2022, CHENNAI [REMOTE]

- Pioneered the development of AnyChatBot, an innovative AI chatbot that autonomously constructs its knowledge base using web data, showcasing expertise in AI and machine learning.
- Played a key role in creating a custom scraper/crawler for data acquisition, employing tools like BeautifulSoup and Selenium for efficient web scraping and data preprocessing.
- Contributed significantly to 'Writer,' a Computer Vision project focused on handwriting analysis and comprehension, demonstrating skills in complex AI applications.

Education

Specialization in Data Sciences / Vellore Institute of Technology
SEPTEMBER 2020 – AUGUST 2024, VELLORE

CGPA : 8.2 / 10

Perusing my Bachelors (currently in my 4th year of a 4 year degree) in Technology in Computer Science Engineering with a Specialization in Data Sciences at Vellore Institute of Technology, Main campus.

High School Diploma / Army Public School
APRIL 2018 – APRIL 2020, HYDERABAD

PERCENTAGE : 94 / 100

During my time, I was appointed as the Head-boy, lead delegation at APS RKP MUN, best pitch @ Areolymics 2019 by HAL in Bangalore.

Skills

DATA TOOLKIT

Python • Jupyter Notebook • Tableau • Excel • R • SQL • C++ • C# • Power BI • IBM Cognos • Mongo • Django

ML & DL TOOLKIT

Sklearn • Pandas • NumPy • TF & Keras • PyTorch • FastAI • spaCy • BERT • GPT • MLflow • Spark/ PySpark • RLlib • Stable Baselines • OpenCV • PIL • YOLO • Mask R-CNN • U-Net • OCR

LLM TOOLKIT

LangChain • LangSmith • Llama index • AWS SageMaker • Azure ML Studio • HF Text Gen Interface • MLOps • Databricks ML Flow (LLM)

WEB DEVELOPMENT

Go • HTML • CSS • JavaScript • React • Redux Node • Express • Solidity

OTHER SKILLS

Unity • Figma • Adobe XD • Azure AWS • GCP • Kaggle • PPT • Word (Both Certified)

Languages

ENGLISH

HINDI

TAMIL

TELUGU

MODERN GREEK

HIGH VALYRIAN

Personal Projects

Fampay In-Depth Analysis (The Fam Report)
https://thefamreport.harshavinash.in/
WEB MINING, DATA ANALYTICS

Synopsis :

This comprehensive analysis dives deep into Fampay's digital footprint, aiming to enhance its user experience and strengthen its position in the fintech market. The focus is on understanding user perceptions, identifying competitive edges, and optimizing online presence for better customer engagement.

Execution :

- Utilized data mining to gather extensive user feedback across multiple digital platforms, ensuring a comprehensive analysis.
- Implemented natural language processing for detailed sentiment analysis and trend identification in user reviews.
- Used machine learning for competitive intelligence, identifying key areas for strategic improvement.
- Analyzed social media engagement patterns, using data analytics to derive insights for content and engagement strategies.
- Conducted a thorough assessment of website performance, focusing on SEO efficiency and user interface design.

Impact :

Provided Fampay with actionable insights to fine-tune its digital strategy, enhancing user engagement and positioning in the fintech market.

Caduceus
https://github.com/Harsh-Avinash/Caduceus
LOCAL LLM, QUANTIZATION, EDGE COMPUTING, DRIVER OPTIMIZATION

Synopsis :

Caduceus is an innovative, portable AI tool designed to operate offline from a USB drive. It's particularly useful in areas with limited or no internet access, like remote field locations, offering a convenient way to access and interact with Large Language Models.

Execution :

- Applied quantization techniques to optimize LLM performance across different hardware setups.
- Integrated edge computing methods to enable efficient, offline processing of AI models.
- Streamlined the user interface to facilitate easy access and interaction with AI tools, even for non-technical users.
- Ensured data privacy and security by implementing robust local storage solutions on the USB drive.
- Designed the system to be lightweight and adaptable, providing scalable AI functionalities irrespective of the hardware.

Impact :

Aims to bring AI capabilities to remote areas, facilitating AI-driven insights and decisions where internet access is a challenge. It's a step towards democratizing AI usage across diverse environments.

Dynamic Realtime Animation Control
https://github.com/Harsh-Avinash/Dynamic-Realtime-Animation-Control
MEDIAPIPE, OPENCV, TENSORFLOW, BLENDER, BLENDER PYTHON API, THREE.JS, REAL-TIME RENDERING

Synopsis :

This project creates a real-time system for animating user gestures and expressions, making virtual interactions like online education, gaming, and virtual events more engaging. It bridges the gap between physical and digital expression, particularly in environments where visual engagement is key.

Execution :

- Implemented MediaPipe for robust gesture and expression tracking in diverse lighting and background conditions.
- Integrated TensorFlow to enhance the model's ability to interpret complex movements and facial expressions accurately.
- Achieved seamless animation control in Blender, utilizing the Blender Python API for real-time avatar manipulation.
- Developed a high-performance rendering pipeline in Three.JS, focusing on immediate response to user movements.
- Optimized the entire system for low latency, crucial for maintaining engagement in live broadcasting and virtual events.
- Designed the user interface to be intuitive, allowing easy setup and customization for various applications.

Impact :

Offers a tool that allows users to express themselves dynamically in virtual environments without compromising personal privacy. With its simple setup, it's poised to bring a new dimension to online communication and virtual presentations.

Court Hero
https://courthero.sankalpmukim.dev/
RASPBERRY PI, PYTHON, OPENCV, NEXTJS, AUTH0, FASTAPI, DOCKER, WEBSOCKETS

Synopsis :

Court Hero applies advanced machine learning and computer vision to deliver real-time analytics in badminton. It's a game-changer for training sessions and competitive matches, providing coaches and players with instant status on availability.

Execution :

- Implemented OpenCV with Python on Raspberry Pi for real-time monitoring of court activity, efficiently identifying active games.
- Developed a custom logic to handle varying court conditions and player movements, ensuring reliable detection of court usage.
- Utilized Websockets for real-time communication between the court-side Raspberry Pis and the web interface, providing instant updates.
- Designed the frontend using NextJS and Auth0, offering a user-friendly and secure interface for court status viewing.
- Integrated FastAPI for backend development, ensuring a responsive and scalable web service.
- Employed Docker to facilitate easy deployment and scalability, allowing the system to expand horizontally as per usage requirements.
- The system is designed to adapt to varying requirements, ensuring scalability and flexibility in different sports facility environments.

Impact :

Offers a practical solution for sports facilities, enhancing the management of badminton courts. Its efficient real-time monitoring capability helps in optimizing court usage and reducing idle time. With its straightforward setup and scalability, it's set to improve operational efficiency and user experience in sports environments, providing a modern approach to facility management.