HARMANPREET SINGH

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EDUCATION

Masters in Computer Science
Rutgers, The State University of New Jersey • New Brunswick, NJ

Bachelors of Technology in Electronics and Communication
Dr. B.R Ambedkar National Institute of Technology • Jalandhar, India

SKILLS

Languages: Python, R, Java, JavaScript, HTML/CSS
Tools & Frameworks: Pandas, Numpy, PyTorch, TensorFlow, scikit-learn, GPT, LangChain, spaCy, FastAPI, Agentic
Cloud Databases: SQL, MongoDB, VectorStore, AWS (S3, SageMaker, Redshift, Quicksight, EC2, Lambda)
Engineering: Machine Learning, MLOps, Data Ingestion, LLMs, RAGs, Docker, Hadoop, Spark, Unit & A/B Testing, Jenkins, CI/CD

PROFESSIONAL EXPERIENCE

Invidi Technologies
Data Scientist **June 2024 – Present**

(Python, Machine Learning, Forecasting, Analytics, QuickSight, Time Series, Regression, AWS, REST APIs)

- Built an **MLOps pipeline** using AWS Sagemaker and API Gateway to deploy ML models as scalable, serverless endpoints, integrated with CI/CD for automated deployment and real-time monitoring.
- Achieved **60-70% accuracy** in forecasting impressions at ad and inventory levels using models like ARIMA, SARIMA, RandomForest, and XGBoost. Overcame data quality challenges with fine-tuned feature engineering and business insights.
- Developed an ML-driven ad scheduling optimization system, improving pacing accuracy by 15% and reducing under/over-delivery by 30% through dynamic frequency adjustments and forecast integration.
- Conducting research on an LLM-powered campaign log classification pipeline to extract key insights (advertiser, impressions, engagement) and structure them for analytics.
- Developed and deployed multiple reporting dashboards in **QuickSight**, providing actionable insights on **inventory utilization** and **tracking impressions**, reducing manual report processing.

Visa Inc.
Senior Software Engineer **August 2021 – August 2022**

(Java, JavaScript, Python, Adobe Experience Manager (AEM), React.js, Machine Learning, REST APIs)

- Collaborated with product teams to redesign entire Visa's intranet, improving retention and **user experience** by **40%**.
- **10x improvement** in jobs listing page response time by implementing targeted scheduling & caching.
- Developed an ML-powered job recommendation engine, enhancing user engagement and increasing click-through rates.
- Enhanced Visa's chatbot using NLP, improving response accuracy and **cutting query resolution time by 30%.**
- Constructed **10+ REST APIs** for Employee Dashboard, facilitating efficient data integration across various product teams.
- Experiment with in-house and third-party data sets to test hypotheses on relevance and value of data to business problems.

Netcentric, A Cognizant Digital Business
Backend Engineer **November 2019 – July 2021**

(Java, JavaScript, AEM, Adobe Analytics, Machine learning, Angular, OSGi, AWS, CSS/SCSS)

Kia Motors (EU + UK)

- Translation of **50+ wireframes** and creative designs into functional requirements, and subsequently into technical design.
- Capitalized on Adobe Analytics to apply real-time analytics and segmentation across marketing channels.
- **60% automation** of workflow by implementing CI/CD pipelines for deployment and testing.
- Deployed Brokers (RabbitMQ), REST APIs and remote procedure call to interconnect microservices.

InterContinental Hotels Group

- Integration with SaaS based translation service to translate campaign content into a wide range of languages.
- Leveraged AEM as content management system to create a consistent experience increasing traffic by **32%**.
- Implemented functionalities like personalized navigation, SSI, and dedicated console to add/edit hotel data.

Publicis Sapient
Associate Technology **December 2017 – October 2019**

(Java, JavaScript, Python, AEM, Django, Analytics, Machine learning, Apache Sling, CSS/SCSS)

One Web Presence

- Analytics to gauge the effectiveness of the marketing campaigns, create customer profiles to boost the profitability of advertisement and sales efforts.
- Developed components, templates, services, and servlets to drive the entire Roche Diagnostics website.
- **15% performance improvement** in search functionality by integrating with Search & Promote.

Employee Attrition Prediction using Machine Learning

- Fed HR data as input into machine learning models to predict employee attrition.
- Built a program by utilizing a **XGBoost** stored in S3 buckets with an **accuracy of 91%.**
- Orchestrated data pipeline which comprises Data pre-processing, Data analysis, Model training, Model validation, and Model predictions resulting in a **50% automation** of workflow.

INTERNSHIPS & ACADEMIC ROLES

Invidi Technologies
Software Developer Intern **May 2023 – May 2024**

Advanced Inventory Scheduling System for Efficient Ad Campaign Delivery

- Devised an efficient inventory scheduler using Python that matches media inventory with campaign data, improving ad placement based on a range of scheduling rules.
- Achieved **98% utilization rate** of ad inventory by designing and implementing advanced scheduling rules, including day parts, days of the week, network inclusions/exclusions, and separation logic.
- Analyzed **4 years** of TV audience data and large AWS Redshift data sets, providing actionable viewership insights across **30+ markets** and revealing key data relationships.

Rutgers University
Research Assistant, Dr. Matthew Weber **February 2023 – May 2024**

Longitudinal Study of Local News in New Jersey

- Comprehensive analysis on **millions** of news records from **700+ domains** within New Jersey region using tools like NLP, Named Entity Recognition, and machine learning algorithms such as **k-means** clustering and random forest.
- Visualized regional news trends across **21 counties** using **pandas** and **pySpark**, and managed AWS model deployment.
- Analysis and identification of news deserts by mapping and monitoring geographical coverage in local news.

Full Stack Developer and Machine Learning Engineer, GRID **March 2023 – May 2023**

- Developed a language learning web application using Next.js and FastAPI, with AWS services for storage and deployment.
- Led UI/UX design, database schema, and integrated a ML model for real-time emotion detection with **72.4% accuracy**.

Research Assistant, Dr. Ana Paula Centeno **November 2022 – February 2023**

Data-Driven Analysis of CS Enrollment and Performance Trends

- Comprehensive analysis of enrollment and performance trends over **5 years** in Rutgers' foundational computer science courses using advanced data analytics and visualization tools.
- Research on gender-based disparities in computer science enrollment and performance, utilizing data science to promote equity and inclusion in higher education.

ACADEMIC PROJECTS

InsightWing: AI-Driven Web Content Summarizer
Link

- Developed a Chrome extension utilizing **FalconLLM** and **LangChain** for efficient **60-word web content** summarization.
- User-friendly interface with HTML/CSS and JavaScript and integrated a chat feature for interactive content engagement.

Document Question Answering System with LangChain and LLMs
Link

- Built a Document QA system using LangChain, HuggingFace Transformers, and FAISS for retrieval-augmented generation.
- Utilized HuggingFace embeddings and FAISS for efficient document retrieval and response generation.

Global Socioeconomic Patterns and Risk Factors in Suicide Trends
Link

- Analyzed the impact of GDP on suicide rates globally using R, revealing key economic correlations.
- Examined age and gender factors affecting suicide, providing insights through **data visualizations**.

StyleGAN Implementation and Few-Shot Generative Domain Adaptation

- Implemented **StyleGAN** from scratch on the **FFHQ dataset**, achieving benchmark results with FID and PPL metrics.
- Employed **Few-Shot GDA** via Domain Re-modulation (**DoRM**) to adapt StyleGAN across diverse datasets, including MetFaces and Anime faces.

Spiking Neural Network for Sign Language Recognition

- Developed a spiking neural network (SNN) for sign language recognition using the ASL-Dynamic Vision Sensor dataset.
- Achieved a test **accuracy score of 96.7%,** demonstrating the potential of SNNs for ASL recognition.

Alcohol Detection and Accident Prevention Technology

- Non-invasive technology that will quickly determine driver's alcohol level based on BAC standards.
- Conceptualized logistic regression, support vector machine (SVM) algorithms and digital image processing to detect alcohol impairment based on driver's behavior with an accuracy of **~72%.**

BLOGS & APPRECIATIONS

- Published a Medium article that covers an intuitive library for form validation. Joi – Form validation made simple.
- Received "Rookie Award" and "Made a difference" for exceptional performance and amazing client impact.