Vishal Singh Yadav

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Summary

Results-driven Data Scientist and Machine Learning Engineer with experience in developing and deploying ML models, NLP solutions, and AI tools. Experienced at applying advanced data analysis and optimization techniques to enhance decision-making and operational efficiency. Proficient in leveraging cutting-edge technologies and methodologies, including data preprocessing, real-time model implementation, and cloud platforms (AWS, Azure).

Education

- **Indian Institute of Technology** — Hyderabad, India
  Masters of Technology (by Research) - *Computer Science and Engineering; GPA: 8.38* — *Jan 2020 - Dec 2022*
- **GGS Indraprastha University** — New Delhi, India
  Bachelors of Technology - *Computer Science and Engineering; Percentage: 71.2* — *Jul 2014 - May 2018*

Experience

- **Carelon Global Solutions (*formerly Legato Health Technologies*)** — Hyderabad, India
  Associate Data Scientist — *Jul 2023 - Present*
  - Worked on enhancing the Cost of Care platform by integrating AI predictive analytics, anomaly detection, and conversational insights using GenAI to transform retrospective data into proactive, state-wise forecasts of member healthcare utilization and costs for the next three months, enabling rapid decision-making and timely interventions.
  - Awarded by the Director of AI for swift and successful product deployment; received the "Go Above Award" twice for leading the team to deliver a member dashboard under tight deadlines and for the accelerated delivery of the ARROW project, which is projected to generate $1.5M in vendor insourcing value by 2025.
  - Engineered a medical conversational AI system using LLAMA2 with RAG architecture, integrated via LangChain for enhanced context retrieval and response generation, fine-tuned LLAMA2 for medical question-answering using QLORA with 4-bit quantization, achieving optimized performance.
  - Developed LLM-based algorithms for health condition detection, significantly improving detection accuracy increases coverage from 48% to 81%, delivering a transformative solution enabling 15x greater member outreach.
  - Built risk score prediction and clinical flagging models with explainable AI, enhancing underwriter interpretability and decision-making processes with delivering $100K in business value.
  - Developing and deploying various machine learning models to streamline underwriting processes, increasing efficiency and providing value to underwriters. Utilizing advanced LLM technology to enable innovative conversational AI solutions.
  - Partnered with cross-functional teams to implement machine learning models across cloud (AWS/Azure) and on-premises environments, enhancing decision-making and operational efficiency through business rules, data visualization, and mathematical software.
  - Employed data preprocessing and large-scale optimization strategies, boosting model accuracy and efficiency while leveraging cloud platforms (AWS, Azure) and containerization (Docker) for scalable and efficient deployment.
  - Engineered models for identifying High-Cost Claimants and Special Conditions, achieving a 5% improvement in predictive accuracy through advanced analytics.
- **Qulabs Software India Pvt Ltd** — Hyderabad, India
  Machine Learning Engineer — *Mar 2023 - Jul 2023*
  - Spearheaded the development of a conversational AI chatbot and RAG models, achieving efficient real-time document retrieval and approximate matching across extensive datasets.
  - Mentored developers on best practices for code development, data preprocessing, and deployment, improving team efficiency and project quality.
- **Krama Lab, IIT Hyderabad (*Machine Learning Research*)** — Hyderabad, India
  Research Assistant — *Jan 2020 - Dec 2022*
  - Advanced research in domains such as point cloud segmentation, knowledge graph completion, and graph representation learning as a Research Assistant sponsored by GreatFour Systems.
  - Engaged in multiple research projects, developing few-shot learning methods and applying graph neural networks (GNNs) for enhancing point cloud classification and knowledge graph completion.

Certifications

- **Carelon Global Solutions & Prizmato**: Advanced Certification in Generative AI
- **nvidia**:
  - Applications of AI for anomaly detection, Fundamentals of Deep Learning, Building Transformer-based NLP Applications
  - Fundamentals of Accelerated Data Science, Fundamentals of Accelerated Computing, Accelerating Data Engineering Pipelines
- **University of Washington**: Machine Learning Specialization (through Coursera)
- **University of Michigan**: Applied Machine Learning (through Coursera)
- **deeplearning.ai**: Deep Learning Specialization (through Coursera)

Skills

- **Programming Languages**: Python, C++, Bash
- **Frameworks & Libraries**: TensorFlow, PyTorch, HuggingFace, SpaCy, Scikit-learn, NLTK, Keras, XGBoost, LightGBM
- **Tools & Technologies**: Natural Language Processing, LLMs, OpenAI, Docker, Git, GitHub, LaTeX
- **Data Skills**: Statistics, Data Preprocessing and Postprocessing, Few-Shot Learning, Graph Neural Networks (GNNs), Object Detection, Distributed ML Frameworks, Feature Engineering, Hyperparameter Tuning, Model Evaluation Metrics (AUC, ROC, F1 Score), Data Visualization (Matplotlib, Seaborn), DevOps, SQL
- **Soft Skills**: Data-Driven Decision Making, Predictive Modeling
- **Platforms**: Linux, AWS, Windows

Achievements

- **Carelon Global Solutions**:
  - **Award for Rapid Product Deployment:** Recognized by the Director of Data Science for the swift and successful deployment of a critical product, enhancing operational efficiency and supporting business objectives.
  - **Go Above Award:** Honored twice for exceptional dedication and leadership; first for delivering a crucial member dashboard within a 24-hour deadline, and second for accelerating the ARROW project delivery amid tight deadlines.
- **Mentorship**:
  - **AI and Advanced Technologies Mentorship:** Delivered expert mentorship through a course facilitated by NSE Talentsprint and IIT Hyderabad, aiding the development of future leaders in AI and advanced technologies.

Publications

- **Context Aware Question Routing in Community Question Answering Sites**:
  Vishal Singh Yadav and Manish Singh - May 2023

Projects

- **ARROW - AI/ML-Driven Underwriting Risk Assessment Tool (NLP, Machine Learning)**: Part of the team that developed ARROW(Anthem Rating and Risk Optimization Wizard), an AI/ML-driven risk assessment tool for Elevance Health, projected to deliver $1.5M in vendor insourcing value by 2025. The tool streamlines the underwriting process by analyzing financial, clinical, and demographic data to automate risk assessment. Incorporated predictive modeling, natural language processing (NLP), and machine learning algorithms to enhance data-driven decision-making. Implemented data visualization techniques and real-time model deployments, achieving a 20% reduction in underwriting time. Utilized large-scale optimization and data preprocessing to integrate risk scores into the rating system, improving process efficiency, market competitiveness, and underwriting accuracy.
- **Medical-LLM (Machine Learning, NLP, LLM)**: Contributed to the development of Medical-LLM for Elevance Health, utilizing advanced Language Model (LLM) technology to process and analyze sensitive medical data while ensuring HIPAA compliance and user privacy. Improved data processing efficiency by 10% through model optimizations and advanced data analytics. Integrated cloud solutions and distributed ML frameworks, improving data security and operational efficiency. Collaborated with cross-functional teams to boost model accuracy by 5% and reduce manual intervention by 10%, significantly improving medical data handling and enabling effective use of LLMs.
- **Medical Compliance Suite - AI-Powered Automation for Healthcare Compliance (Machine Learning, NLP, LLM)**: Led the development of 'Compliance,' a suite of AI-powered tools for automating medical compliance processes in the US Healthcare sector at Qulabs Software. Created Machine Learning tools, including Language Model (LLM) powered chatbots, document matching algorithms, and medical compliance checks. This initiative significantly improved the efficiency and accuracy of compliance processes, leveraging real-time model implementations, large-scale optimization, and few-shot learning.