VIKRANT BHATI

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Summary

Graduate student in Computer Engineering with a specialization in Machine Learning and 7+ years of software development experience. Skilled in fine-tuning LLMs, designing RAG-based solutions, and developing agentic AI systems. Strong industry background in large-scale distributed systems and monolith decomposition. Currently seeking AI Engineer roles to build and deploy intelligent, AI-powered applications.

Education

Virginia Tech, Blacksburg, VA

Master of Science – Computer Engineering (3.71/4.0) *Aug'2024 – In Progress*

- *Related Coursework:* Deep Learning, Natural Language Processing, Advance Machine Learning, Computer Vision, Nonlinearity & Predictability.

Dr. A.P.J. Abdul Kalam Technical University, Uttar Pradesh, India

Bachelor of Technology, Electronics and Communication Engineering (ECE) *Jul'2013 – June'2017*

- *Related Coursework*: Data Structure, Cyber Security, Software Design using C++, Microprocessors, Microcontroller and Its Applications, Signal Systems, Linear Algebra

Technical Skills

- **Programming Languages:** Python, Java, C++, Data Structures & Algorithms, Object-Oriented Programming (OOP)
- **Tools & Frameworks:** TensorFlow, PyTorch, LangChain, Model Context Protocol(MCP), Hugging Face, scikit-learn, Pandas, NumPy, Matplotlib, Seaborn, Plotly, Tableau, Redis, Kafka (Pub/Sub)
- **Databases:** MySQL, CouchDB, RDBMS, MongoDB , NoSQL, ChromaDB
- **Clouds & Ops:** Google Cloud Platform (GCP), Microsoft Azure, Amazon Web Services (AWS), CI/CD, Terraform, Git, Jenkins, Kubernetes
- **Machine Learning & AI:** Machine Learning, Deep Learning, Supervised & Unsupervised Learning, Neural Networks (CNNs, RNNs, DNNs, MLPs), Data Visualization, LLM Fine Tuning, RAG

Machine Learning Projects

LLM-Augmented Optimization Solver Framework, *Virginia Tech,* Sep'2025 – *In Progress*

Tech Stack: Python, PyTorch, LLaMA-Factory, Gurobi Optimizer, OptMATH Framework, Transformers, Pandas, NumPy

- Adapted concepts from the OptMATH framework to design a LLM pipeline that converts natural language optimization problems into underspecified forms by selectively removing key information.
- Trained Gurobi (Knapsack, Set Cover, Factory Planning, etc) models via supervised fine-tuning (LLaMA-Factory) on auto-generated clarifying Q&A pairs, enabling the model to resolve underspecified and produce solvable optimization tasks.

Comprehensive Study of CNN, *Virginia Tech, GitHub* *Apr'24 – May'2024*

Tech Stack: *Python, PyTorch, TensorFlow, ResNet18, ODConv, scikit-learn, ImageNet, Pascal VOC*

- Performed comprehensive performance analysis of Convolutional Neural Networks (CNNs) across multiple configurations for both image segmentation and classification tasks.
- Compared ResNet18-based CNN models across multiple configurations, including standard (no attention), soft attention with per-pixel and global feature maps, hard attention, and Omni-Directional Convolution (ODConv)—evaluated on ImageNet and Pascal VOC datasets for image classification and segmentation tasks.

GRPO on LLM, *Virginia Tech, GitHub* *Mar'24 – May'2024*

Tech Stack: Python, PyTorch, Qwen 2.5, GRPO, Chain-of-Thought, Fine Tuning, Hugging Face, Gemini 2.0 Flash

- Implemented Generalized Reward Policy Optimization (GRPO) over Qwen 2.5 with Chain-of-Thought (CoT) prompting on a medical dataset, enabling interpretable decision-making and demonstrating improved model performance through the integration of CoT and GRPO strategies.
- Used a Supervised Fine-Tuned (SFT) model as the base and evaluated performance using metrics such as Perplexity, with Gemini 2.0 Flash as an LLM-based evaluator. Post-processing with GRPO led to an approximate 7% improvement in overall output quality.

Gesture Control Game, *Virginia Tech, GitHub* *Oct'24 – Oct'2024*

Tech Stack: Python, OpenCV, MediaPipe, PyTorch, TensorFlow, NumPy

- This project was to develop a gesture-based control system for a direction-controlled game in which a gamer can move left and right or continue going straight by using hand gestures.
- Collaborated in a two-engineer team, primarily focusing on the computer vision component, using MediaPipe and OpenCV to detect hand gestures from a camera feed and integrating into the game.

Professional Experience

Viavi Solution (former JDSU) , *Co-op Software Engineer* *May'2025 – Dec'2025*

Tech Stack: *Python, MCP, Linear Regression, KNN, XGBoost, LangChain, ChromaDB, RAG, AI-Agent, C++, QT*

- Working an ML solution for BERT analysis to predict optimal tap values from optical module configurations using an ensemble of XGBoost and KNN stacked with Linear Regression, reducing brute-force evaluation of 1000+ combinations.
- Working on a RAG-based solution to generate testing workflows from customer requirements, enabling end users to create personalized workflows instead of relying on a fixed base template.
- Worked on C++ software to interface with FPGA hardware, including migrating from 32-bit to 64-bit and implementing communication modules to enable reliable, real-time data acquisition for next-generation network testing.

Fiserv*, Specialist - Software Development Engineering* *Apr'2021 – Jul'2024*

Tech Stack: *GCP (Pub/Sub, GCS, Cloud Functions, Cloud Spanner), GKE, Terraform, REST APIs, Spring Boot, Microservices*

- Designed and deployed a DNC microservice on Google Cloud (Pub/Sub, GCS, Cloud Functions, Kubernetes, Cloud Spanner) to improved DNC compliance and avoid potential class-action lawsuits.
- Led a team of 5 engineers to build a native inventory storage solution that enabled merchants to manage multiple menus, cutting reliance on external apps and potentially reducing the inventory management costs with 75%.
- Engineered the migration from a monolithic application to a distributed microservices architecture, enhancing scalability and agility while reducing infrastructure costs by an estimated 32% and downtime by 80%.

Fiserv, Professional - *Software Development Engineering* *Dec'2018 – Mar'2021*

Tech Stack: *Java, JSP, Spring Boot, Struts2, MySQL, Docker, OpenShift, Fortify, Sonatype, WebInspect, Voltage (HPE Tool)*

- Engineered the end-to-end Card Free Cash feature, including a standalone server processing ATM/POS requests, a web application for financial institution onboarding, a customer-facing mobile app, and supporting infrastructure.
- Decreased deployment time by 43% and deployment costs with 24% monthly via CI/CD pipeline automation while integrating Fortify, Sonatype, and WebInspect to our system more reliant, compliant, and robust.
- Developed the library to encrypt Personally Identifiable Information (PII) and Payment Card Industry (PCI) data using Voltage (HPE Tool).

Fiserv , *Trainee - Quality Assurance Engineering* *Oct'2017 – Nov'2018*

Tech Stack: *IBM Rational Functional Tester, Java, Oracle, Git, Jira, Agile*

- Automated 600+ manual test cases using the IBM Rational Function Tool, leading to a 60% per sprint reduction in the regression efforts.
- Built and executed comprehensive test cases and test suites for the Billing module in IIP Application. Successfully reduced 50% regression bugs in each sprint.
- Acquired proficiency in vital software development areas: Agile methodology, GIT version control, and Jira project management.

Leadership Positions & Awards

- Mentored and evaluated 180+ students in Applied Software Design at Virginia Tech, ensuring proficiency in C++ efficiency, OOP principles, and complex software design.
- Represented Viavi Solutions at Virginia Tech's 2025 Engineering Expo career fair, engaging with prospective candidates and reinforcing the company's presence among top engineering talent.
- Pioneered Fiserv's Clover initiative as the first Server Engineer in India, playing a key role in building a team from its inception to a force of 250+ engineers.
- Recognized with an Fiserv Success Story highlighting my professional journey to inspire fellow engineers.
- Received 15+ Living Proof awards for outstanding work and Employee of the Month on 3 occasions while working for Fiserv.
- Won three Clover Hackathon competitions held globally securing Judges Awards, 2nd place and 1st place respectively by implementing Communication Commerce using RCS, Smart inventory and Automatic Tip Management system.

Extracurricular Activities

- Engage in CSR activities at Fiserv, like plantation drives, and classes for underprivileged students.
- Worked as a Barista at AMP Coffee House, Virginia Tech, delivering quality customer service in a fast-paced environment while managing beverage preparation and daily operations.