

# VANSH BHATIA

Toronto, Ontario — ML & Full Stack

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## Education

### University Of Toronto, Department of Computer Science

Sept 2024 - Dec 2025

*Master of Science in Applied Computing (MScAC)*

*Toronto, Ontario*

**Relevant Roles & Coursework:** Teaching Assistant (CSC111), Teaching Assistant (CSC110), Machine Learning, Database System Technology, Cloud-Native Database Management Systems, Topics in Software Engineering, Neural Networks and Deep Learning

### SRM Institute of Science and Technology

May 2020 - June 2024

*BTech in CSE with Specialization in Software Engineering*

*Chennai, TN*

**Relevant Coursework:** Data Structures & Algorithms, Artificial Intelligence, Computer Architecture, Operating Systems, Design Patterns, Cloud & DevOps

## Experience

### Fidelity Investments

Jan 2024 – Aug 2024

*Software Engineer Intern*

*Bangalore, KA*

- **Architected and led** the overhaul of Fidelity's Assets and Holdings workflow by developing a high-performance, multithreaded bulk upload feature and optimizing caching mechanisms, achieving a **40% increase in operational efficiency** and reducing processing time by **21%**, while ensuring **scalability** through RESTful principles.
- **Pioneered the decentralization** of core services into dedicated containers and **EKS EC2**, and built a **CI/CD deployment pipeline** from scratch using Jenkins and Docker, resulting in **seamless automated deployments and enhanced system scalability and robustness**.
- **Engineered mission-critical services** for the index team, leveraging a tech stack including **Spring, AWS, Angular, and SQL** which **improved service reliability** and supported the organization's expansion, preparing the system for future growth with a microservices architecture.

### Fidelity Investments

Jun 2023 – Aug 2023

*Software Engineer Intern*

*Bangalore, KA*

- **Spearheaded the development** of a centralized Data Quality Framework using **Angular, Java 21 with Virtual Threads, and Oracle**, resulting in a **20% improvement in transaction processing speed** and handling millions of transactions efficiently.
- **Designed and implemented** JSON-based caching and storage strategies, **improving load times by 1.5x** and optimizing overall system performance, while creating 8+ intuitive screens that enhanced user engagement and provided actionable insights into investment and fund transactions.
- **Automated and modernized CI/CD pipelines** with Jenkins and Docker, modernizing the development process and increasing deployment efficiency leveraged AWS and EKS to ensure scalability and robust cloud-native deployment practices.

### Spinny

Apr 2022 – May 2023

*Software Engineer Intern - iOS*

*Gurugram, HR*

- Developed and optimized **two iOS apps for a user base of 5.6k**, reducing load times by **25%** through multi-threading and efficient caching, while integrating over 30 APIs, including document management and operations with Digilocker for seamless data operations. Engineered **scalable architecture** with custom authentication, real-time analytics, and **automated batch tasks**, leveraging backend APIs and Firebase, laying a foundation for future AI/ML enhancements through modular and extendable code.

## Projects

### ASL-to-English Translator (Transformer-based Model) | *Python, OpenCV, PyTorch, Mediapipe, NLTK, Pandas*

2024

- Designed and implemented a **transformer model** to translate American Sign Language videos into English sentences by **processing 33x3 pose landmark sequences** extracted using Google's **Mediapipe**, achieving contextually meaningful predictions with **80% semantic accuracy** during manual review.
- Refined a **sequential data pipeline** using **OpenCV** to process video frames, trained the model using tokenized word targets (NLTK), reducing processing time per batch by **30%** and enabling scalable handling of large ASL datasets. Fine-tuned model performance with **BLEU scores and cross-entropy**, identifying critical bottlenecks and improving sentence coherence by **25%** compared to baseline models, demonstrating the potential for ML-driven accessibility solutions.

### Wordle Solver Using Reinforcement Learning | *RL, A2C, Stable Baselines3, Gym*

2024

- Developed a **Wordle-solving ML model** using **Advantage Actor-Critic (A2C)**, leveraging **staged training** with steadily larger vocabularies & achieving a win rate of over **99%** with an average of **3.5** guesses per game after training for 5M games.
- Designed a NN architecture to reduce **action space** from **13k discrete actions to 130** by **1-hot encoding** words, integrated **heuristic strategies** & real-time suggestion modes, optimizing computation through perceptrons, improving training efficiency.

## Technical Skills

**Languages:** Python, Java, C++, PL/SQL, SQL, Swift

**Technologies/Frameworks:** TensorFlow, PyTorch, Scikit-Learn, OpenCV, Spring & Spring Boot, AWS, Docker, Kubernetes, Kafka

**Developer Tools:** PyCharm, IntelliJ IDEA, VS Code, GitHub, XCode, Jenkins, Jira

**Competitions:** 2nd Place WinHacks, 4th Place Competitive Coding (SRM), Top 10% in Leetcode and Codeforces, AWS

PROFESSIONAL PROFILE

- Experienced in **Machine Learning, Neural Networks, Reinforcement Learning** and **Deep Learning**, with hands-on expertise in implementing scalable, production-ready models using frameworks such as **TensorFlow, PyTorch, OpenCV** and **Scikit-Learn**.
- Proven track record in developing and optimizing software solutions at scale, leveraging **Python, Java, Spring Boot, AWS, Docker, Kubernetes**, and **Kafka** achieving significant improvements in efficiency, reliability, and performance.
- Exceptional analytical skills with a commitment to continuous learning and innovation, known for delivering impactful results in **high-pressure environments** and contributing to **high-performance teams**.

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WORK EXPERIENCE

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