Arnav Verma | Dallas, TX (Open to Relocation)

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EDUCATION
University of North Texas — *Denton, TX*
Bachelor of Science in Computer Science - *Expected May 2026* **GPA: 3.60**
Relevant Coursework: Data Structures & Algorithms (A+), Operating Systems (A+), Artificial Intelligence (A+), **Software Engineering** (A), Database Systems (A), Machine Learning (A), **Natural Language Processing** (A+), Linear Algebra, Probability
Affiliations: IEEE Computer Society, UNT AI Research Program, UNT Robotics Club,
Achievements: Dean's List, President's List, Winner at HackSMU 23 & 24, HackUNT 23 & 24, Runner Up HackUTD 24

TECHNICAL SKILLS
*Languages***:**   **Python (Proficient)**, **JavaScript (Proficient)**, C++ (Intermediate), SQL (Intermediate)
*Libraries***:**   PyTorch, HuggingFace Transformers, FastAPI, Flask, React, Pandas, NumPy, Scikit-learn, TensorFlow
*Dev Tools***:**   AWS, Docker, **Kubernetes**, PostgreSQL, MongoDB, Jupyter, Azure, AWS, SageMaker
Concepts: Machine Learning, Deep Learning, NLP, LLM Fine Tuning, Adversarial ML, MLOps, Full Stack Development

EXPERIENCE
University of North Texas - Denton, TX
Undergraduate Research Fellow (*May 2024 - Present*)
- **Fine tuned transformer models** (BERT, Longformer, LLaMA-2, LLaMA-3) for adversarial reasoning and retrieval augmented tasks, achieving **up to 28% faster convergence** by applying **4 bit quantization and LoRA parameter efficient training**
- **Built an evaluation framework** measuring reasoning degradation under adversarial perturbations, enabling **consistent model comparison across checkpoints and architectures**.
- **Engineered scalable fine tuning pipelines** using PyTorch, Hugging Face, and PEFT with automated preprocessing, worked with multiple data formats and reproducible metric logging (accuracy, F1, recall).

University of North Texas - *Denton, TX*
Teaching Assistant – *CSCE 4290: Natural Language Processing* (*Aug 2025 – Present*)
- Assisted professor in designing assignments, grading, and holding weekly office hours for 60+ students.
- Helped students understand concepts in **tokenization, embeddings, sequence models, and transformers**
- Built and maintained Jupyter based lab templates demonstrating model fine tuning using Hugging Face and PyTorch

PROJECTS
LLaMa FineTune | ***Python***, *PyTorch, Transformers, PEFT, BitsAndBytes* | github.com/namesarnav/llama-finetune
- Built a **LoRA/QLoRA fine-tuning pipeline** for Llama models on NER and text classification tasks.
- Automated preprocessing (ConLL to Parquet) and evaluation using custom metrics (accuracy, F1, recall).
- Open sourced on GitHub integrated with Hugging Face Hub for reproducible results.

Rubik's Cube Solver | ***C++***, *Algorithm Design, Performance Optimization* | github.com/namesarnav/rubiks-cube-solver
- Designed a **state-space search engine** that computes optimal cube solutions using **Breadth-First Search (BFS)** and **A*** with heuristic cost functions, achieving near-optimal move counts across random scrambles.
- Implemented an **efficient graph-based state representation** and memory-optimized hashing scheme, improving traversal speed by **40%** compared to naïve implementations.
- Benchmarked algorithmic performance across multiple solving strategies to evaluate trade-offs between time complexity and solution optimality.

JWT Authentication & Key Management System | ***Node.js***, *Express, SQLite, JWT, AES-256, RSA* | github.com/namesarnav/jwks
- Engineered a **secure key management and authentication service** supporting automated **JWT generation**, **AES-256-encrypted key storage**, and **Argon2 password hashing**, ensuring end-to-end data confidentiality.
- Developed **RESTful API endpoints** with input validation, rate-limiting, and structured logging to handle concurrent authentication requests with high throughput.
- Automated **RSA key-pair rotation and expiry tracking**, mitigating cryptographic vulnerabilities while maintaining uptime.

LEADERSHIP
Eagle Ambassador - Represented UNT in campus events and outreach initiatives; assisted prospective students in orientation sessions
Hackathons – First place of **36 teams** at HackSMU for building a platform to help connect students with right mentors; **First Place** of **20 teams** at HackUNT for building a Payments manager app for financial literacy
Career Readiness Peer Mentor - Mentor students on resume building, interview preparation, and professional communication.
Event Director, ITDS Cybersecurity Club - Helped organize and build a team for UNT in cyber 9-12 cybersecurity competition