**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, Shell ***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 2025 - 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*](http://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](https://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*](http://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 –** 1st place at HackSMU (mentor-matching app) and HackUNT (financial literacy app); runner-up at HackUTD

**Career Readiness Peer Mentor** - Mentor students on resume building, interview preparation, and professional communication.

**Event Director, ITDS Cybersecurity Club –** Organized UNT’s team for the Cyber 9/12 competition.