

Arnav Verma | Dallas, TX (Open to Relocation)
arnavv2003gmail.com | ArnavVerma@my.unt.edu | (940) 783-1887
namesarnav.vercel.app | linkedin.com/in/namesarnav | github.com/namesarnav |

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 (Credential ID: 31FE7F413A22C488)**
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

- 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 – 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.