

UTKARSH GUPTA

📞 +91 9529133103 ✉ itsutkarsh1207@gmail.com [🌐 LinkedIn](#) [🐙 GitHub](#)

Education

Indian Institute of Technology Dharwad

B.Tech, Computer Science And Engineering

2022 – Current

CPI: 9.17

Work Experience

AI Intern

Jun 2025 - Present

Dvara-E-Registry

- Developed and implemented a **price imputation pipeline** for commodities, utilizing **weighted correlation imputation** with a **365-day rolling window** to accurately fill missing price data by leveraging correlated market trends.
- Analyzed and visualized commodity price data using statistical techniques like Lasso regression and Plotly, achieving reliable imputation results (e.g., $R^2 \approx 0.8$) for enhanced market forecasting and decision-making.

Summer Research and Development Internship

May 2024 - Jul 2024

FutureGNetworks Lab, IIT Dharwad

- Led experimental research for resource profiling in virtualized Radio Access Networks (vRAN), employing scalable multi-core server infrastructure and a Kubernetes-based 5G testbed under the guidance of Prof. Koteswarao Kondepu.
- Integrated open-source power monitoring and system profiling tools (**KEPLER**, **Prometheus**, **Grafana**) into containerized 5G RAN deployments to enable **real-time telemetry** of **CPU**, **cache**, **memory bandwidth**, and **energy** metrics.
- Built **automated workload generation** and dynamic resource allocation workflows using **iperf3**, evaluating throughput, CPU utilization, **LLC cache allocation**, and **memory bandwidth** across deployment models (**Monolithic RAN**, **Disaggregated RAN**, **C/U-plane separation**).

Publications

Research Paper - IEEE ANTS 2024

Dec 14, 2024 – Dec 18, 2024

IEEE ComSoc / 5G vRAN, Energy Profiling, Kubernetes, Prometheus, Grafana

IIT Guwahati, India

- Analyzed **Radio Access Network (RAN)** components of cellular networks focusing on CPU utilization, LLC (Last-Level Cache) ways allocation, and memory bandwidth efficiency.
- Co-authored and published** research paper in the IEEE ANTS Conference 2024.

Projects

AI Playwright | Scikit-learn, NLTK, Pandas, NumPy, Pytorch



- Developed a custom subword tokenizer** inspired by BPE and WordPiece to efficiently handle rare words and reduce vocabulary size for NLP tasks.
- Built a lightweight GPT-style language model** from scratch using PyTorch, including custom attention, feedforward layers, and training loop on tokenized text data.
- Trained and evaluated the transformer model**, achieving low perplexity on the test set, with checkpointing and inference capabilities for custom sentence generation.

College Tech Fest Website | ReactJS, ExpressJS, HTML5, JavaScript, React Three Fiber, Tailwind



- Contributed to a React-based 3D web experience** using **React Three Fiber** and **Three.js** for an interactive and immersive event website.
- Utilized Tailwind CSS and Vite** to build responsive, high-performance UI components with efficient styling and fast development workflows.
- Integrated 3D assets and animations** into the frontend enhancing visual appeal and user engagement.

DDoS attack Detection and Mitigation in SDN | Python, Mininet, Ryu Controller, scikit-learn, OpenFlow, hping3



- Developed a real-time ML-based intrusion detection system for SDN environments, achieving **98.6%** accuracy using **Random Forest**.
- Constructed a **dynamic DDoS mitigation framework** with the **Ryu controller** and **OpenFlow**, enabling **automatic detection and blocking within 5 seconds** while maintaining **> 80% legitimate traffic throughput** post-mitigation.
- Automated traffic simulation and aggregation** in a **6-switch, 18-host Mininet topology**, validating robustness across **TCP-SYN**, **ICMP**, and **UDP** attacks with **low false positives** and **high availability**.

Certifications

HackerRank — SQL Skill Test Certification: [Basic](#), [Intermediate](#), [Advanced](#)

Technical Skills

Languages: C/C++, Python, JavaScript, Bash

Frameworks / Testing: NodeJS, ExpressJS, ReactJS,MySQL, MongoDB

DevOps: Kubernetes, Docker, Prometheus, Grafana

Key Courses: Data Structures and Algorithms, Design and Analysis of Algorithms, Deep Learning, Operating Systems,DBMS

Achievements

General Secretary Academic Affairs (2025-26) and **Junior General Secretary Academic Affairs** (2022-24)

Assistant Student Mentor Coordinator, Student Mentorship Program(SMP), IIT Dharwad

Public Relations Coordinator, Carrer Development Cell (CDC), IIT Dharwad

Class XII Achievement: INSPIRE Scholarship awardee (Top 1%) for securing top percentile in Maharashtra Board (2021-22)