Chathurvedhi Talapaneni

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Education

Georgia Institute of Technology, *Atlanta, USA* — *GPA - **4/4***
*Master of Science in **Computer Science** (Specialization in **Computing Systems**)* — *Expected Graduation: May 2026*

Indian Institute of Technology, Madras, *Chennai, India* — *GPA - **9.17/10***
*Bachelor of Technology in **Computer Science and Engineering*** — *Graduated: May 2024*

Experience

Goldman Sachs | Summer Intern — *(May - July 2023)*
Analyst for the Controllers Strats Division — *Bangalore, India*

- Introduced a novel predictive model for **unverified equities' funding spreads**, by leveraging **domain transfer learning** from verified equities, which served as external benchmarks for **Vega price validation** in equity contracts with sparse market data
- Evaluated model performance across 7 market regions and several market segments, identifying key features influencing the predictive behaviour of the model

Perception Algorithms for Underwater Vehicles | Research Intern — *(May - July 2022)*
Summer internship under Prof. Suresh Sundaram — *IISc, Bengaluru*

- Leveraged state-of-the-art algorithms to achieve precise **image segmentation** and **object detection** for **Robotic Perception**
- Developed and applied an efficient algorithm for object detection after considering aspects such as **computational complexity**, **edge implementation**, and the effects on performance to enable **effective navigation**

Teaching Assistant — *(Jan - May 2025)*
CS4365: Intro to Enterprise Computing — *Georgia Tech*

- **Mentored, addressed doubts and graded assignments** for 88 undergraduate and graduate students
- **Lead a course structured project, LIKE (Live Knowledge Evolution)** with **6 teams** focusing on **LIKE (Live Knowledge Evolution)** addressing domains such as Fake Covid News and Synthetic Novelty Generation

Projects

Ingress Dropping in Active Queue Management | *Bachelor's Thesis Project*
Guide: Prof. Krishna Moorthy Sivalingam, Department of Computer Science and Engineering — *IIT Madras*

- Developed and integrated **Ingress Dropping** into **Active Queue Management** algorithms using **programmable switches** achieving **6% improvement in throughput** and **26% reduction in packet loss**
- Deployed algorithm on the **V1 model** switch using **P4** and validated using rigorous testing on **Mininet** evaluations
- Evaluated the ingress-dropping variant of the **Codel algorithm** against the traditional egress-dropping approach, on **4 different network benchmark topologies** focusing on **mitigating bufferbloat** and **managing network congestion**

International Road Segmentation | *Course project* | *CS 8803 - Data-Centric Machine Learning* — *Georgia Tech*

- Investigated **domain adaptation** techniques for semantic image segmentation across diverse geographic environments
- Implemented **CycleGAN** for style transfer between **Cityscapes** and **Indian Driving Dataset (IDD)**
- Integrated **DeepLabV3+ MobileNet** for lightweight training and inference, achieving **43.2**% mean IoU on Cityscapes-stylised IDD images.

Optimizing Garbage Collection | *Undergraduate Research Project*
Guide: Prof. Krishna Nandivada, Department of Computer Science and Engineering — *IIT Madras*

- Implemented **tiered memory systems** and performed compile-time points-to and liveness analysis to **optimize garbage collection in Java**
- Devised an algorithm to insert `free()` calls to objects at last usage points while ensuring **program flow integrity**

Compiler for Macro-Java | *Course project* | *CS 3300 - Compiler Design* — IIT Madras

- Built a 5 stage compiler for **Macro-Java** from scratch using Java and C
- Leveraged tools such as **Flex** and **Bison** for lexical analysis and type-checking

Skills

Programming: Python, C/C++, Bash, Java, P4, Prolog, Scheme, JavaScript
Software: Pytorch, Tensorflow, Git, Vim, LaTeX, MySQL, Wireshark, scapy, Mininet, JTB, AWS, D3, Spark, Docker
Key courses: Real-Time Systems, Network Security, Data Visual Analytics, Deep Learning, Compiler Design, Secure Systems Engineering

Achievements and Extracurriculars

- All India Rank of 149 in the Joint Entrance Examination, Advanced 2020
- All India Rank of 319 in the Joint Entrance Examination, Mains 2020
- Selected for the Indian Mathematical Olympiad 2019 and participated in the INMO Training Camp
- Coordinator, CFI Programming Club - Taught programming in the Summer Programming Camp held by CFI, IIT Madras and orchestrated contests for competitive programming