

HARSHIT TIMMANAGUDAR

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EDUCATION

University of California, San Diego, Master's of Science in Computer Science. Sep 2024 - Jun 2026
Coursework: Data Systems for ML, Distributed Systems, Networked Services, Large Model Reasoning.

PES University, Bachelor of Technology in Computer Science and Engineering. Aug 2020 - May 2024
Coursework: Data Structures, Advanced Algorithms, Graph Theory, Image Processing, Database Management.

SKILLS

Languages C/C++, Python, Golang, Java, JavaScript, Bash, SQL, Neo4j
Frameworks/Tools PyTorch, TensorFlow, Kubernetes, Docker, NodeJS, MongoDB, PostgreSQL, Git, Redis, AWS.
Soft Skills Conflict Resolution, Growth Mindset, Resilience, Empathy, Constructive Feedback, Teamwork

EXPERIENCE

Graduate ML Systems Researcher May 2025 – Present
University of California, San Diego - STABLE Labs *La Jolla, CA*

- Solved memory fragmentation in **LLM KV cache systems** by architecting hierarchical memory allocation, achieving **over 300x faster store operations** and **superior scaling** with only **11.5x degradation** versus HuggingFace's **40x degradation** at 16,000 tokens.
- Built concurrent multi-user request handling for KV Cache with **atomic memory allocation**, **distributed sharding**, and write-through buffering, maintaining consistent **sub-100 micro second store latencies** across sequence lengths from 512 to 16,000 tokens.

AI Research Intern Jan 2024 - Jun 2024
Peptris Technologies *Bangalore, India*

- Spearheaded development of **data augmentation pipeline** for **Graph Attention Network**-based molecular conformation models, generating **25,000+** additional training samples and improving model accuracy by **12%**.
- Architected and optimized **sampling framework** for a **Diffusion Model**-based protein-ligand pose generation, collaborating with **ML engineering team** to reduce the generation time from **2.3s to 1.7s (35% improvement)**.

Machine Learning Intern Jun 2023 - Sept 2023
Peptris Technologies *Bangalore, India*

- Engineered automated **Large Language Model** inference pipelines for **protein sequence generation**, enabling **high-throughput analysis** of **500,000+** compound pairs with **92.5% accuracy**.
- Developed **3D U-Net** model architecture for **binding site detection** in voxel-based analysis, collaborating with **research scientists** to identify **30+** novel molecular interactions and accelerate **drug discovery** timelines.

PROJECTS

DistRAG. Tackled database scalability and accessibility issues by developing a **multi-node PostgreSQL cluster** with **RAG-powered natural language querying**, automated scaling, and intelligent caching for high availability and user-friendly data access. ([GitHub](#))

StreamGrid. Addressed video distribution and fault tolerance challenges by developing a dynamic platform with **MPEG-DASH** streaming, gRPC cluster control, **consistent hashing** for content placement, and a **RAFT metadata layer** for resilient operations on AWS. ([GitHub](#))

Git-LeetCode. Streamlined coding practice workflows by developing an automated **GitHub integration tool for LeetCode** that tracks submissions, synchronizes solutions, and provides **LLM-powered optimization insights**. ([GitHub](#)).

PUBLICATIONS

- [1] **Enhancement of Malware Detection Systems using Mal-cGAN**. Feb 2024
ISI, Springer Nature doi: [10.1007/978-981-97-2147-4_24](https://doi.org/10.1007/978-981-97-2147-4_24)