

OMKAR MAHESH KASHYAP

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EDUCATION

PES University

Bachelor of Technology in Computer Science & Engineering, **GPA 3.88/4**

Aug 2022 - Apr 2026

Bengaluru, India

EXPERIENCE

University of California, Berkeley

Research Intern

Advisor: Prof. Prasad Raghavendra

Jun 2025 - Aug 2025 (Upcoming)

Berkeley, CA

- Selected for research collaboration on statistical watermarking techniques for Large Language Models (LLMs), contributing to advancements in AI security and content authentication methods.
- Tasked with performing comprehensive literature analysis on state-of-the-art detection algorithms and implementing novel experimental protocols.

Center for Data Sciences and Applied Machine Learning, PES University

Machine Learning Research Intern

Jun 2024 - Aug 2024

Bengaluru, India

- Contributed to research and development of Hypergraphs for Aspect-Based Sentiment Analysis, focusing on short-text scenarios with limited data
- Co-designed and implemented a novel hypergraph construction approach using hierarchical clustering with adaptive thresholding, improving the model's ability to capture nuanced aspect-sentiment relationships.
- Led experiments and ablation studies, achieving a state-of-the-art F1-Score of 0.83 and validating the effectiveness of our architecture across multiple graph-based baselines.

ONGOING PUBLICATIONS

From Graphs to Hypergraphs: A Novel Clustering-Based Approach to Aspect-Based Sentiment Analysis (EMNLP 2025, under review)

PROJECTS

Virtual TryOn

- Engineered a Virtual Try-On web application using React and Flask, integrating TensorFlow for image processing, and leveraging a NoSQL backend for efficient data management.
- Constructed a real-time image processing pipeline capable of handling 30+ frames per second with sub-200ms latency by optimizing TensorFlow models and implementing efficient NoSQL caching strategies.
- Delivered a cross-platform virtual fitting experience with 90% user satisfaction ratings by developing custom overlay techniques and responsive design principles. Open-sourced at [GitHub link](#).

Knowledge Graph Generator

- Built a full-stack web app to convert user-input text into interactive knowledge graphs using a locally hosted open-source LLM and Neo4j for dynamic entity-relation visualization.
- Engineered a modular backend with FastAPI and Docker to handle text processing, graph management, and API orchestration; leveraged Hugging Face Transformers for summary and entity extraction.
- Designed an intuitive frontend using Next.js, Cytoscape.js, and Zustand for state management, enabling real-time graph rendering and user-driven knowledge expansion. Open-sourced at [GitHub link](#).

Distributed Systems Simulator

- Developed a lightweight distributed-systems simulator in Python using Flask and packaged it in a Docker container to emulate core Kubernetes control-plane operations.
- Established a complete RESTful API ecosystem processing 100+ operations per second with average latency under 50ms by implementing efficient request handling and asynchronous task queuing.
- Integrated a volume-mounted SQLite database to persist cluster metadata across container restarts. Open-sourced at [GitHub link](#).

TECHNICAL SKILLS

- Languages:** Python, C, C++, Javascript, HTML, SQL
- Technologies/Frameworks:** PyTorch, TensorFlow, LangChain, FastAPI, OpenCV, Spark, Docker, Kubernetes, AWS, Git, Linux
- Relevant Courses:** Machine Learning, Data Science, Image Processing, Data Structures and Algorithms, Cloud Computing, Heterogeneous Parallelism, Big Data, Operating Systems, Object Oriented Programming, Software Engineering, Computer Architecture

AWARDS & GRANTS

- CNR Rao Merit Scholarship: 20% tuition fee waiver** to top 20% students at PES University **Dec 2023, May 2024**
- MRD Merit Scholarship: 25% tuition fee waiver** to top 5% students at PES University **Dec 2022, May 2023, Dec 2024**
- Ranked 9th statewide** in the Karnataka Pre-University (12th Grade) Board Examination **Jun 2022**