Achala Nayak

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TECHNICAL SKILLS

- **Languages:** C++, Python, JavaScript,TypeScript, HTML,CSS, MySQL
- **Web Development:**React, Node.js, Next.js, Bootstrap, FastAPI
- **Tools:** Git/GitHub, Unix Shell, Matlab
- **Big Data:** Kafka, AWS, Docker
- **Databases:** MongoDB, MySQL, PostgreSQL, Prisma

EXPERIENCE

Hewlett Packard Enterprise   **Bengaluru**
Software Developer Intern   February 2025 to present

- **Streamlined application deployment** using a **metadata-driven approach**, improving logic for selecting required application layers during cluster deployments.
- Contributed to the **full software development lifecycle**: requirements analysis, coding, internal testing, and **Jenkins pipeline integration**.
- Developed and enhanced features for **cluster setup**, **node management**, and **log extraction**.

PUBLICATIONS

- **A Multi-Agent Approach for Iterative Refinement in Visual Content Generation**
  *AAAI 2025 | Advancing LLM-Based Multi-Agent Collaboration. **Accepted***
  - Co-authored and presented a research paper at AAAI WMAC 2025 on AI-driven visual content generation.

PROJECTS

Multi-Agent Approach for Iterative Refinement in Visual Content Generation   Next.js, Fabric.js, PostgreSQL, FastAPI, LLaMA 2, Pixtral, GPT-4o-mini, Stable Diffusion XL, SAM, Docker, PyTorch, Python

- Engineered a full-stack system integrating a Canva-like editor with real-time agent interaction via REST APIs and Server-Sent Events, enabling users to monitor and influence AI decision-making live.
- Developed a multi-agent architecture orchestrated by a lightweight FastAPI control server, where specialized agents—Critic, Planning,Execution and Evaluation— to iteratively refine AI-generated visual designs.
- Deployed state-of-the-art models including LLaMA 2 , Pixtral and GPT-4o-mini , Stable Diffusion XL , and Florence, each containerized using Docker and served on a shared T4 GPU for memory-efficient parallel inference.
- Utilized a serverless PostgreSQL instance to store canvas states and refinement history as JSON, enabling efficient state recovery and cross-session consistency.
- Achieved horizontal scalability across frontend, backend , database, and inference, ensuring robust performance under load.

Cuisine & Code Chronicles   Next.js,HTML,CSS,MongoDB,Prisma ORM,Firebase,NextAuth

- Developed a dynamic blog website centered on travel, food, and tech using Next.js, delivering fast and SEO-optimized performance.
- Implemented a RESTful API to handle backend services, enabling efficient and scalable data interactions.
- Leveraged Prisma ORM with MongoDB to streamline database operations and ensure maintainable data architecture.
- Integrated Firebase for secure image storage and fast media retrieval across the platform.
- Employed NextAuth for robust and secure user authentication, protecting user data and managing sessions effectively.

AI Engineering Academy   Next.JS,HTML/CSS,MySQL,Prisma,Stripe,UploadThing,Mux

- Designed an innovative e-learning platform focused on revolutionizing online education through personalized Generative AI content.
- Enabled tailored student experiences by integrating video lectures, summarized lessons, and downloadable documents.
- Developed features for educators including course creation, progress tracking, and real-time student communication.
- Aimed to redefine digital education by aligning with the evolving demands of AI-driven learning and modern technological challenges.

Yet Another KRaft   Python, FastAPI, Thunder Client, RAFT Consensus

- YAKt is an educational endeavor delving into the intricate workings of distributed systems and consensus algorithms, specifically emulating the mechanisms of Zookeeper and Kraft.
- Serving as a learning tool, it offers a detailed exploration of the Raft Consensus algorithm, ZAB Consensus algorithm, and Kafka's architecture.
- Implemented in Python with FastAPI, YAKt features a distributed node management system focusing on leader election, log replication, and fault tolerance.
- The project aims to demystify complex architectures and provide hands-on insights into the realm of distributed systems.

EXTRA CURRICULAR/AWARDS

PwC Launchpad Program – Salesforce   **January 2024 – June 2024**
- Selected as one of 17 students from my university for the PwC Launchpad Program.
- Gained hands-on experience in software engineering, MySQL databases, object-oriented programming (OOP) using Java, and Salesforce CRM.
- Successfully completed the program, developing practical skills in cutting-edge technologies.

GDSC PESU RR Campus   **Student Coordinator, August 2023 – May 2024**
- Coordinated and executed various events, showcasing strong organizational and leadership skills.
- Conducted a workshop on open source as part of Hacktober Fest 2023, attracting approximately 200 participants.

Samarpana   **Core Member, June 2023 – December 2023**
- Played a key role in Samarpana, an initiative supporting families of Indian Armed Forces martyrs.
- Organized Samarpana 2023 charity run, enhancing awareness and fostering patriotism.

Shunya   **Core Member, August 2022 – December 2023**
- Led math workshops for government school students and organized hackathons to promote problem-solving skills.
- Organized Vicharaprapancha, a science fest explaining concepts through practical applications to government students.
- Coordinated "Anveshana," an ideathon involving around 150 students who created prototypes based on the given themes.
- Managed "Arithemania 2.0," a 30-hour flagship hackathon hosted by Team Shunya.

IEEE RAS   **Core Member, December 2022 – September 2023**
- Organized hackathons and workshops focusing on technical development.
- Contributed to the RERO Lab, India's first 24/7 virtual lab established by a university.
- Organised "Learning Path 2.0," an online workshop series covering Microcontrollers, Image Processing with Metaverse, Fusion 360, and ROS, with 130 participants.

Hackathons   **Participant**
- Competed in Hallothon'22, Kodikon 2.0, and Kodikon 3.0.

EDUCATION

- **BTech**, Computer Science and Engineering, PES University
- **Pre University**, Deeksha Center For Learning | 97.8%
- **CBSE Class 10**, BGS National Public School | 95.3%