

Harshit Kashyap Sarma

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Summary

Computer Science graduate and incoming MSc student in **Sound and Music Computing** at Universitat Pompeu Fabra, Barcelona. **Full-stack developer** with production experience across authentication, payments, caching, and serverless data pipelines, plus hands-on work in **audio machine learning** and generative models. Comfortable moving between backend, ML, and frontend, and keen to build music technology that combines software engineering with audio and data.

Education

MSc in Sound and Music Computing

Universitat Pompeu Fabra, Barcelona

Sept 2026 (Incoming)

BSc in Computer Science

Vellore Institute of Technology, Vellore

8.37/10

July 2023 – May 2026

Technical Skills

Languages: Python, JavaScript, TypeScript, Go, C/C++, Java, ChuckK

Backend: FastAPI, Node.js, Express.js, REST APIs, OAuth 2.0

Machine Learning & Audio: PyTorch, Librosa, NumPy, JUCE

Frontend: React.js, Next.js, Tailwind CSS, HTML/CSS

Databases & Tools: MongoDB, PostgreSQL, MySQL, Redis, AWS (Lambda, S3), Git, Postman, Vercel, Cloudflare

Experience

Software Developer Engineer (SDE) Intern, KnowledgeVerse AI

May 2025 – Aug 2025; Dec 2025 – Present

- Implemented Google and Microsoft SSO using **OAuth 2.0** Authorization Code Flow with **PKCE**, writing both the Next.js frontend and the FastAPI backend authentication logic.
- Built a **Stripe** subscription flow with dynamic plan selection, Payment Intents, and **webhooks**, with real-time UI updates using the Stripe Python SDK and Stripe.js.
- Built and published the company's **Python SDK** to **PyPI**, packaging the platform's APIs into a reusable, versioned client library for developers.
- Migrated the backend from a fully **synchronous** to an **asynchronous** (async/await) architecture, improving concurrency and throughput for I/O-bound requests.
- Added **Redis caching** to the document repository, cutting file and folder listing times by roughly **15x**, with TTL-based cache invalidation.
- Built a serverless pipeline on **AWS Lambda** and **S3** for event-driven file processing, and integrated Google Drive, OneDrive, and SharePoint uploads with multi-tenant authentication.

Projects

- **Kick Drum Synthesizer (Generative Audio) – Variational Autoencoder** in **PyTorch** that synthesizes new kick drums by sampling a learned latent space. Trained on 128x128 Mel spectrograms extracted with Librosa. [GitHub]
- **Clueminati Portal** – Full-stack treasure-hunt PWA using **Next.js**, TypeScript, Tailwind CSS, and **MongoDB Atlas**, with automated question serving, team tracking, live leaderboards, and role-based access for participants, core members, and admins. Deployed on Vercel. [GitHub]
- **Oscillator Synthesizer (Audio Plugin)** – Real-time synthesizer VST built in **C++** with the **JUCE** framework, generating audio from oscillator waveforms with parameters controlled through a custom plugin interface. [GitHub]

Positions of Responsibility

Board Member & R&D Lead, CodeChef-VIT

- Led technical delivery of CookOff, Clueminati, and Devsoc, flagship hackathons for **1000+** participants, adding automation and process improvements through custom PWAs and web portals.
- Wrote the “**SynthQuest: Building a VST from Scratch**” blog series and ran workshops for peers and local students on audio-plugin development, web development, and programming fundamentals.

Tech Coordinator, GraVITas (VIT Tech Fest)

- Ran technical operations for GraVITas 25 (**40,000+** participants, **200+** events), keeping the website and platforms stable, and mentored a developer team building the event portal and admin panels with role-based access.