Chirag Sameer Rasane

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Summary

B.Tech Electronics and Communication Engineering student at Manipal Institute of Technology, interested in large language models, multimodal deep learning and AI-native wireless communication. Experienced in building LLM-powered applications with multi-provider inference routing, audio-visual engagement prediction models, PHY-layer simulation, channel coding and full-stack development.

Projects

carpoolr, Founder – Instant Carpooling App (Android) 2026 – Present

- Built on-demand pooling with no pre-scheduled rides: riders heading the same direction are matched in real time through a Postgres matching function on Supabase
- Implemented distance-proportional fare splitting, dividing each shared stretch per km among the riders on it
- Developed the Kotlin client (supabase-kt) with row-level security, email OTP and magic-link sign-in with deep-link handling, and APK builds on GitHub Actions CI

Image Transmission over Noisy Channels – NVIDIA Sionna, PyTorch 2026

- Simulated Kodak images over AWGN at a 1/12 bandwidth ratio using JPEG, JPEG 2000 and HEVC source coding with 5G NR LDPC ($n=6144$, QPSK to 256-QAM, 12 MCS levels)
- Benchmarked practical links against Shannon-capacity and finite-blocklength (normal approximation) bounds from 0 to 20 dB SNR, as baselines for Deep JSCC
- Quantified the cliff effect of adaptive MCS under 1 dB SNR-estimation error: up to 5.7 dB PSNR loss (HEVC at 14 dB)

NetParty – netparty.tech 2026

- Built a Manifest V3 extension that keeps HTML5 video playback in sync across clients by relaying play, pause and seek events over WebSockets
- Wrote the sync server on Cloudflare Workers with Durable Objects, so rooms persist across redeploys and clients auto-resync; added end-to-end encrypted chat and WebRTC voice

Heatmapify – heatmapify.onrender.com 2026

- Built a REST API (FastAPI, RQ, Redis) that returns a video's most- and least-replayed segments, using YouTube's official data or a 4-signal fusion of comment timestamps, captions, audio and visual cues
- Trained a ridge-regression audio AI layer on 21 YAMNet sound-event features per window against official replay data, using leave-one-video-out validation on YTMR500 videos
- Built an offline evaluation harness against official curves (Spearman, top-5 peak recall) with nested leave-one-video-out model selection and paired bootstrap confidence intervals

Afterworld – afterworld.biz.id 2026

- Built a multi-provider LLM platform routing across OpenRouter, Groq, SambaNova and Cloudflare Workers AI with live time-to-first-token tracking; migrated the backend from Azure (FastAPI) to Cloudflare Workers with a SQLite Durable Object

Work Experience

Growth and Marketing Intern – Aroviah: Care Beyond Borders Sep 2026 – Nov 2026

- Produced a series of short-form reels for audience growth and scripted the brand's 20-second vertical video ad, covering story, voiceover, sound design and call to action
- Built an AI-assisted animation pipeline in Python (NumPy, OpenCV, ffmpeg) to render the ad at 1080x1920, 60 fps with 3D motion graphics, burned-in captions and a Kokoro TTS voiceover
- Mastered audio to −14 LUFS with 50+ synced sound effects, and automated quality checks for logo accuracy, health claims, legal disclaimers and caption safe zones

Technical Skills

- **Programming:** C, C++, Python, JavaScript, SQL, PostgreSQL
- **Embedded & Hardware:** ESP32, microcontrollers, sensors, Verilog HDL; Xilinx ISE, Tinkercad, Multisim, MATLAB
- **Wireless & Signal Processing:** Digital modulation (QPSK to 256-QAM); 5G NR LDPC channel coding; AWGN channel simulation; Shannon-capacity and finite-blocklength analysis; image codecs (JPEG, JPEG 2000, HEVC) and PSNR evaluation
- **Machine Learning:** PyTorch, NVIDIA Sionna, NumPy, SciPy

Education

Manipal Institute of Technology (MAHE) • Manipal, India 2025 – 2029

Bachelor of Technology (BTech) • *Electronics and Communication Engineering* Cumulative CGPA: 7.83/10.0

Activities and Societies

- Research Society, Management Committee – AI, Electronics September 2026 – Present
- Hostel Representative, Block-9 September 2026 - Present
  - Represent 650 residents across 4 floors, raising maintenance issues in block representative meetings and resolving them with the Chief Warden and block wardens
- IEEE EMBS, Working Committee – Research and Projects, Media and Content August 2025 – May 2026