PARTH VAREKAR

AI Engineer | Full-Stack Developer | Computer Engineering Student

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SUMMARY

Computer Engineering student (expected 2028) building AI and full-stack systems in Python, TypeScript and React. Experience across computer vision, speech/LLM systems, offline AI, collaborative interfaces and data analytics. Focused on practical deployment, testing and measurable results.

ENGINEERING HIGHLIGHTS

- **Offline AI:** Built a local Windows voice-input workflow with Qwen3-ASR + llama.cpp, including formatting and text rewriting.
- **Computer Vision:** Built real-time video analysis and optical tracking with YOLO11, OpenCV and Kalman filtering.
- **Full-Stack:** Built React/Next.js apps and a collaborative design editor using Yjs/CRDT state.
- **Analytics:** Processed 50,000+ records with SQL and delivered five Power BI dashboards during internship.

TECHNICAL SKILLS

Languages: Python, TypeScript, JavaScript, Java, SQL, C++
AI / ML: Computer vision (YOLO11, OpenCV, Qwen3-VL), speech recognition (Qwen3-ASR), local LLMs (llama.cpp), RAG, multi-agent pipelines, PyTorch, ChromaDB, FAISS, Gemini API, Kalman filtering
Backend & Data: FastAPI, Flask, Node.js, REST APIs, PostgreSQL, MySQL, SQLite, Prisma, Firebase, QIIME 2, Power BI
Frontend & Tools: React, Next.js, Tailwind CSS, Vite, Konva, Yjs, PySide6, Chrome Extensions (MV3), Docker, Git, GitHub Actions, Linux, Arduino

PROJECTS

H.A.L.O. github.com/ParthVarekar/H.A.L.O
Python, PyTorch, YOLO11, Qwen3-VL, React (SIH26174)
- Built an offline on-board AI that watches a science procedure on video, recognizes each step and speaks an alert the moment one is skipped or out of order; runs in real time (25 fps) on a single laptop GPU with no network.
- Trained YOLO11 on real ISS footage (held-out mAP50 0.79): followed all 8 steps of the MELFI freezer procedure in order with 0 false alerts and caught a removed step 1.5 s in. Added a signed, hash-chained event log, a 1 KB downlink report, UDP video streaming and a React dashboard; 276 tests.

COSTA github.com/ishwar-prog/COSTA
Optical Tracking & Alignment | Python, OpenCV, PySide6 (SIH26169)
- Built an AI tracker for free-space optical links that identifies a partner terminal's beacon by its blink signature (FFT + naive-Bayes) instead of brightness, then holds it with a Kalman filter and a 60 Hz gimbal controller; needs no training data.
- Met all six SIH targets in 28 of 28 validation cases (acquisition 0.83–1.60 s vs 2 s limit, tracking error under 3.3 px vs 10 px limit); drives a real Arduino pan/tilt head.

BioRadar github.com/omtawde09/BioRadar
Python, QIIME 2, Docker, React (SIH25042, team project)
- Helped build an eDNA biodiversity platform for Indian waters that turns sequencing reads into a species list, invasive-species risk, spread forecast and bilingual (English/Hindi) dashboard, with a SHA-256 Merkle ledger for tamper-evident results.
- Validated at 100% recall with zero false positives (80 of 80 detections) on a mock community, which also exposed a mislabelled public NCBI record.

Chumps Lab Studio github.com/ParthVarekar/chumps-lab-studio
TypeScript, React, Python, Remotion, FFmpeg
- Built an AI video editor for screen-recording tutorials that analyzes speech, OCR and screen motion to automatically add zooms, captions, labels, graphics and sound effects.
- Added a timeline editor with draw-to-place effects, animated elements and an AI assistant that proposes editable changes; supports local model inference and Remotion-based rendering.

RoboForge github.com/college-hack24-nov26/hack-odyssey
Python, MuJoCo, Webots, ESP32, OpenCV
- Built a chat-first engineering platform that turns machine requirements into part lists, 3D simulations and stress tests, then compares a physical rover with its simulated twin.
- Developed a rover calibration workflow using ESP32 firmware and gyroscope measurements to diagnose motor imbalance, calculate corrections and re-measure; 900+ automated tests.

EXPERIENCE

Data Analytics Intern, Imarticus Learning — Mumbai, India | Feb 2026 – Mar 2026
- Wrote SQL queries to extract and transform 50,000+ records for analysis.
- Delivered five interactive Power BI dashboards that cut weekly reporting time by 15%.

EDUCATION & CERTIFICATIONS

Bachelor of Engineering in Computer Engineering, Excelsior KC College of Engineering, Thane — Expected 2028
CGPA: 8.31/10 | University of Mumbai | Admitted via MHT-CET
Certification: Full-Stack Java Development, EduSkills (A+ grade)