

Vinayak Agrawal

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SUMMARY

Product-minded engineer comfortable across the stack, from frontend to applied ML. I've shipped a fitness platform, co-founded a software agency, and built a computer vision MVP for a paying client. I care about writing good code, thinking through the product, and figuring out what actually needs to get built.

EDUCATION

- BMS College of Engineering, Bangalore** 2021 – 2025
Bachelor of Engineering in Electronics and Communication CGPA: 7.5 / 10.0

EXPERIENCE

- Independent Builder** Aug 2025 – Present
Product Engineer Remote
 - **Built solo:** Built three products end to end with no team – two live in production, one a client MVP. Owned scoping, design, frontend, backend, and deployment.
 - **Client work:** A turf owner came to me with a vague brief about wanting stats from his footage. I scoped what he actually needed, designed the full system, and built it to a working MVP.
 - **Co-founded NSS Soft:** Set up a software agency with a partner. Built the product site, wrote the positioning and pricing, and delivered web projects for existing clients across India and internationally.
- K4 Media & Technologies LLP** May 2025 – Jul 2025
Web Development Intern, Ed-Tech Startup Remote
 - **Shipped features:** Built and maintained production web apps for educational content delivery on a weekly release cycle.
 - **Full-stack work:** Worked across frontend and backend, picked up the codebase fast, and shipped without much hand-holding.

PROJECTS

- Football Analytics System** | Python, YOLO26, ByteTrack, OpenCV private repo, client MVP
 - **Custom detection model:** Trained a YOLO26 detector on around 2,000 self-annotated frames of turf footage using two-phase transfer learning (frozen-backbone head training, then a gentle full fine-tune) to avoid catastrophic forgetting; raised ball-detection recall from 40% to 69%.
 - **CV pipeline:** Built the full pipeline around the model: goalpost-based homography calibration (pixel to metres), ball-occlusion interpolation, track-ID validation, ROI filtering, and HSV jersey-colour team separation.
 - **Event analytics:** Layered rule-based event detection (passes, shots, possession) on the tracking data, producing annotated match video, per-team positional heatmaps, and a JSON match summary.
- Manaura Fitness Platform** | Next.js 14, TypeScript, Tailwind CSS, Framer Motion manaurafitness.com
 - **Live product:** Production platform for a fitness brand handling class registrations, community engagement, and content delivery.
 - **Product call:** Chose WhatsApp and Google Forms over building custom flows. Shipped faster and the client got something working in days, not weeks.
- NSS Soft, Software Agency** | Next.js, TypeScript, Tailwind CSS, Vercel nsssoft-in.vercel.app
 - **0 to 1:** Built the full go-to-market site: service pages, case studies, two-tier pricing, and a Cal.com booking flow to convert visitors into calls.
- Multimodal Sentiment Analysis** | Python, PyTorch, Hugging Face, OpenCV github.com
 - **Built from scratch:** Combined transformer NLP, 3D CNNs for video, and audio feature extraction into one sentiment scoring pipeline. Trained and orchestrated entirely solo.

SKILLS

- **Languages:** TypeScript, JavaScript, Python, SQL
- **Frontend:** React, Next.js, Tailwind CSS, Shadcn UI, Framer Motion, HTML5, CSS3
- **Backend:** Node.js, Express.js, REST APIs, PostgreSQL, MongoDB, SQLite, Supabase
- **AI / ML:** PyTorch, Hugging Face, YOLOv26, ByteTrack, OpenCV, Generative AI
- **Tools & Cloud:** Git, GitHub, AWS (EC2, S3), Vercel, Docker, Postman