Anirudh Vasudevan

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He/Him

EDUCATION

University of Minnesota, Twin Cities — ***MN, USA***
Master of Science in Computer Science; GPA: 3.89/4 — *2023 - 2025*

SRM Institute of Science and Technology — ***TN, India***
Bachelor of Technology in Computer Science and Engineering; GPA: 9.2/10 — *2019 - 2023*

IIT Madras — ***TN, India***
Diploma in Data Science — *2021 - 2023*

SKILLS SUMMARY

Languages & Frameworks: JavaScript, TypeScript, Python, React, Next.js, Tailwind CSS, Java, Three.js, Flask
Database & Backend: SQL, PostgreSQL, Supabase, SQL Server, Firebase, RESTful APIs, Pinecone (vector database)
AI & Machine Learning: Hugging Face, LangChain, Langgraph, RAG, Agents, Fine-tuning, Model-Context-Protocol, Ollama, Groq, n8n
Cloud & DevOps: AWS, Cloud-Native Architecture, Git, GitHub, Figma, UI/UX, Agile, Scrum, System Design, CI/CD
Other Skills & Tools: Critical thinking, rapid prototyping, data structures, vector embedding, problem-solving, GenAI, OpenAI API

PROFESSIONAL EXPERIENCE

Nonlinear, San Francisco — **CA, *US***
Founding Engineer — *Aug. 2025 – Present*

- Engineered the Universal Node System for AI workflows with dynamic property handling and a Zustand-powered state caching, reducing configuration time by 45% and enabling faster feature rollout across the platform.
- Built Agentic RAG pipelines powering context-aware AI agents and a Teams bot, reducing retrieval latency by 60% and tripling user engagement post-launch.
- Delivered production-grade features using Next.js, TypeScript, tRPC, Zustand, Drizzle ORM, and integrated OpenAI models.

University of Minnesota, Twin Cities — ***MN, US***
Graduate Research Assistant, Institute of Health Informatics — *Aug. 2023 – Aug.2025*

- Built a 3D AI web app using React, Flask, and Three.js with a custom chatbot for visualizing trends and predictions.
- Built scalable data ETL pipelines for healthcare analytics using Pandas and Scikit-learn, reducing preprocessing time by 25%.
- Tackled predictive modeling for K–12 equity analysis using causal inference on statewide education data.

Blue Hex Software — ***TN, India***
Full Stack AI Developer — *Sep. 2022 – Aug. 2023*

- Led and Built a production-grade OCR SaaS using Python, Flask, and REST APIs for automated PDF data extraction.
- Solved backend performance bottlenecks by optimizing SQL queries and schema, improving latency by 30%.
- Led GitHub CI/CD setup with automated tests and code reviews for stable deployments.

LEADERSHIP/PROJECT EXPERIENCE

TalkativePDF (AI-Powered PDF Chat Platform) - [LINK]

- Developed a SaaS app end-to-end with GPT-4, LangChain, and Pinecone for semantic document Q&A; deployed with CI/CD.
- Solved the need for fast, conversational PDF insights using RAG-based architecture and document chunking.
- Improved query response time by 87% and front end handled over 500+ document uploads during internal testing.

BlewIt: Reddit Clone - [LINK]

- Created a full-stack forum site with Flask, PostgreSQL, and Bootstrap; implemented OAuth, REST APIs, and Jest tests.
- Designed for usability and real-time interaction; integrated search, comments, and responsive multi-user support.
- Reached 95%+ mobile responsiveness and 88% Lighthouse performance across functional devices during QA.

CIVS (Contactless-Integrated Voting System)

- Built a full-stack React + Flask web app with speech and gesture input; implemented semantic HTML and RESTful APIs.
- Addressed accessibility gaps in electoral systems for users with disabilities during pandemic-driven restrictions.
- Achieved 90%+ accessibility compliance (WCAG 2.1 AA), and deployed via Git CI/CD to reduce hosting errors by 85%.

PATENTS/PUBLICATIONS

- Contact-less Integrated Voting System - Published Patent: Patent ID: 202341031598, May 2023.
- A System and a Method for Casting a Vote Based on Real-Time Hand Gestures (Published Patent) : Patent ID: 202341031599.
- Research Paper - A Deep Convolutional Neural Network for Remote Life Activities Detection using FMCW Radar under Realistic Environments.

My name is **Anirudh Vasudevan**, and I'm currently working as a **Founding Engineer at NonLinear**, a startup in the AEC (Architecture, Engineering, and Construction) industry. NonLinear is a B2B company focused on creating automation and AI-powered workflow products similar to n8n, where users can connect nodes and edges to build intelligent, dynamic workflows. I'm part of the core team building these systems end-to-end—from the front-end interfaces to the backend and AI integration. Currently, I'm leading efforts to build and optimize an **AI agent** that integrates directly with our software products and our Teams bot, allowing users to execute workflows through conversational commands. My role involves everything from **React and Next.js development** to **Flask and TRPC backend design**, **PostgreSQL and Supabase database management**, **LangChain-based AI pipeline integration**, and **Zustand-powered caching** for fast and reliable state management. I also engineered the **Universal Node System** at NonLinear, where each node is reusable and configurable dynamically based on its input and output handles. This allows flexible workflow creation with React Flow, where I manage node properties, descriptions, and data flow at runtime. Zustand plays a critical role in caching and impersonation features—for example, when an admin impersonates another user session, Zustand maintains smooth context transitions without performance issues.

I was motivated to pursue **full-stack development** because I genuinely enjoy thinking from the customer's perspective. I love **UI/UX design** and creativity, which is why I started with front-end development and then expanded to backend engineering to bring full-stack experiences to life. Over time, I noticed that integrating **AI into web development** can significantly improve user experience—helping users with recommendations, predictions, and conversational support. AI lets users ask domain-specific questions and get answers as if they're talking to an expert in that field, which makes technology more approachable and useful. That's what drives me to combine AI with web development—making complex systems feel intuitive and human-centered.

In terms of education, I hold a **Master's in Computer Science from the University of Minnesota – Twin Cities**, a **Bachelor's in Computer Science and Engineering from SRM Institute of Science and Technology**, and a **Diploma in Data Science from IIT Madras**. Having completed all three programs, I've developed a strong technical foundation and exposure to both software engineering and data science. I'm proud to say I have **two published patents** under my name—both single-handedly authored—which remain one of my greatest achievements. I also have a research paper published on radar-based human activity detection using deep learning.

When approaching any technical challenge, I start by breaking the problem into smaller, manageable parts. I analyze the question carefully, write down all possible sub-steps, and then methodically work through them, focusing on both functionality and scalability. At NonLinear, I've applied this approach to every aspect of our product—from architecting reusable nodes to integrating vector databases like Pinecone for retrieval-augmented generation (RAG). RAG is especially useful when users upload PDFs or external content; it allows the AI to provide precise, context-aware answers directly from their documents.

I'm proficient in **JavaScript**, **TypeScript**, **Python**, **React**, and **Flask**, and I've been using **LangChain** extensively to streamline AI model integration. LangChain's pre-built structures like model wrappers, system prompts, and agent tools allow me to focus more on innovation than boilerplate code. I also work with vector databases like Pinecone to handle embeddings and semantic search efficiently. I use **AWS**, **Drizzle ORM**, and CI/CD pipelines for deployment, and my stack ensures scalability across both frontend and backend layers.

I'm currently seeking **new opportunities** because my startup is facing financial challenges, and I want to continue growing in an environment that values learning and mentorship. I'm looking for a team where I can collaborate, learn from experienced engineers, and contribute meaningfully to impactful projects. I'm open to both **relocation and remote roles**, and I can **start immediately**. My main priority isn't salary—it's learning. I'm looking for a decent, fair offer that allows me to focus on continuous growth rather than compensation.

What motivates me most in any work environment is **continuous learning, adaptability, and collaboration**. I thrive in fast-paced environments and I'm willing to work extra days or longer hours when needed. I believe this is the perfect era for learning—AI is evolving rapidly, and tools like ChatGPT and LangChain act as incredible mentors. Whenever I learn something new, I always build small prototypes or proof-of-concepts to understand how things work practically. I strongly believe that I can **learn anything given the right time and structure**, and I always use AI tools, documentation, and experimentation to accelerate that process. I'm confident in my ability to adapt to new technologies, build high-quality products quickly, and keep improving every single day.

In addition to my work at NonLinear, I have also been a **Graduate Research Assistant at the University of Minnesota's Institute for Health Informatics** since August 2023, working under Professor Erich Kummerfeld. My research centers on supporting the **Hopkins School District's equity initiatives** through data-driven insights. The project involves analyzing highly sensitive educational and health datasets — including attendance, GPA, demographics, and FRL status — all managed under HIPAA compliance. I designed and automated **data-cleaning and feature-engineering pipelines** in Pandas that cut preprocessing time by roughly 25%. Beyond cleaning, I applied **causal-inference techniques** like inverse-probability weighting and treatment-effect estimation to identify root causes behind disparities in graduation rates and engagement. To make these findings interactive, I built a **full-stack visualization and analytics platform** using React, Flask, and Three.js. The app includes a Plotly-based dashboard, a 3D visualization module, and a custom **chatbot powered by LangChain RAG**, with embeddings stored in Supabase for natural-language querying of de-identified district data. This experience helped me bridge rigorous data science with real-world decision support for K–12 education leaders.

Before graduate school, I completed an eight-month **Full-Stack AI Developer co-op at Blue Hex Software** in India. There, I led development of an **OCR-based SaaS platform** built with Python and Flask that automatically extracted data from PDFs using Tesseract OCR and pdf2image. I implemented tiered user access, optimized unindexed SQL joins by adding proper indexes, and normalized database schemas — resulting in a 30 percent performance improvement. I also contributed to frontend testing with Jest and set up a lightweight CI/CD workflow through GitHub and Docker for stable deployments. This project gave me a solid understanding of backend performance tuning, scalability, and end-to-end product delivery.

During my undergraduate studies, I interned at **Genik Research Institute** as a **Full-Stack Developer for Computer Vision applications**. I designed a **contactless voting system** that used YOLOv7 for hand-gesture recognition and Google's Web Speech API for voice input, enabling accessible, touch-free voting during pandemic conditions. I collected and labeled my own dataset, trained YOLOv7 on Kaggle GPUs to 90 percent accuracy, and integrated the model into a React + Flask web app. The system achieved over 90 percent accessibility compliance with WCAG 2.1 AA standards, and this work later evolved into two **published patents**: *"Contact-less Integrated Voting System"* and *"A System and Method for Casting a Vote Based on Real-Time Hand Gestures."*

Beyond academics, I love building independent AI products. One of my most exciting is **TalkativePDF**, a SaaS application that lets users chat with their PDFs using GPT-4 and RAG architecture. It converts uploaded PDFs into embeddings stored in Pinecone and achieves an 87 percent reduction in query latency through pre-chunking, embedding caching, and Pinecone filtering. Another project, **BlewIt**, is a full-stack Reddit-style forum app built with Flask, PostgreSQL, and Bootstrap, featuring OAuth login, CRUD operations, and responsive design tested to 95 percent mobile responsiveness and 88 percent Lighthouse performance.

I also co-authored a **research paper titled "A Deep Convolutional Neural Network for Remote Life Activities Detection Using FMCW Radar Under Realistic Environments."** This study explored using Frequency-Modulated Continuous-Wave radar for Human Activity Recognition instead of cameras or wearables, preserving privacy in elderly-care applications. We processed radar returns into spectrograms and trained a CNN to classify six activities with strong generalization accuracy using a dataset from the University of Glasgow. This research reinforced my interest in AI for healthcare and privacy-sensitive domains, showing how machine learning can solve real-world human problems.

Outside of work, I’m an active and creative person who believes in maintaining a healthy balance between learning, sports, and personal growth. I’ve always been passionate about **sports**—I’ve represented my **state at the national level in cricket** during college and also enjoy playing **badminton** regularly. I love **watching anime, exploring new movies, and reading books**, which help me unwind and often inspire creative ideas for my projects. I’ve also done **modeling** during my undergraduate years, representing my college at several events. These experiences taught me confidence, presentation, and teamwork—skills that carry over into my professional life.

I’m also deeply passionate about **continuous learning and problem-solving**. I’ve solved over **200 LeetCode problems**, focusing on data structures and algorithms to strengthen my foundation as an engineer. My **GitHub** showcases a wide range of projects—from AI pipelines to full-stack applications—and my **LinkedIn** and **portfolio website** reflect both my academic and professional journey.

When it comes to new technologies or tools, I strongly believe that **no skill is ever out of reach**. Even if there’s something I haven’t used before, I can quickly learn and master it through hands-on practice and structured experimentation. I approach every challenge with a “**yes, I can do it**” mindset. I adapt fast, leverage AI tools efficiently, and enjoy learning by building prototypes that solidify my understanding. I’m currently **ready to start work immediately**, open to **remote or relocation opportunities**, and primarily looking for a **collaborative, growth-oriented team** where I can keep learning, contribute meaningfully, and grow as an engineer. Salary isn’t my main concern—I value experience, mentorship, and impact more than pay.