

Veerbal Singh

Full Stack Engineer & AI Product Builder

Contact Information

- **Phone:** (+91) 7087166421
 - **Email:** veerbal.singh369@gmail.com
 - **Website:** <https://veerbal.vercel.app>
 - **LinkedIn:** <https://www.linkedin.com/in/veerbal1>
 - **Twitter:** <https://twitter.com/veerbal01>
 - **Github:** <https://github.com/veerbal1>
 - **Location:** Dirba, Sangrur, Punjab, India
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About Me

A Full Stack Engineer and Founder with 5 years of experience building scalable web applications and AI-powered products. Proven track record at a Y Combinator-backed AI startups Shepherd, Recoupable and AdTech companies, delivering high-impact solutions in fast-paced environments. Specialized in AI Agent development, Generative AI interfaces, and modern web technologies (Next.js, React, Node.js). Currently building AI agents for creative industries and educational platforms, leveraging cutting-edge LLM technologies to empower users at scale.

Work Experience

Product Engineer (Remote), Recoupable (AI Agent for Musicians)

California, United States | Current Website: www.recoupable.com | Sector: AI Agent for Musicians

- Building AI-powered agent platform to assist musicians with career management and growth
- **Key Contributions:**
 - Developing AI agent interfaces using Next.js, Vercel AI SDK, and Tool Calling capabilities
 - Implementing advanced LLM integrations via Vercel AI Gateway for multi-model orchestration
 - Creating intelligent workflows for music industry professionals
 - Architecting scalable backend systems for real-time AI interactions

Technologies: Next.js, React.js, Vercel AI SDK, Vercel AI Gateway, AI Agents, AI workflows, Tool Calling, OpenAI, Node.js etc.

Founder & Product Engineer, UndercoverDevs

Delaware, United States (Remote) | Oct 2024 - Present

Website: www.undercoverdevs.com | Sector: AI-Powered Education SaaS

- Founded and developed an AI-powered educational platform serving students worldwide
- **Key Contributions:**
 - Built comprehensive AI study tools: research assistant, quiz generator, flashcard creator, and question paper generator
 - Developed interactive Q&A system and topic exploration features using RAG (Retrieval Augmented Generation)
 - Created PDF translation and simplification features for document comprehension
 - Architected full-stack platform managing user authentication, data persistence, and AI model integrations
 - Designed intuitive, accessible interface optimized for student workflows
 - Managed end-to-end product lifecycle: ideation, development, deployment, and iteration

Technologies: Next.js, React.js, OpenAI, Vercel AI SDK, Pinecone, LlamaIndex, PostgreSQL, Tailwind CSS

Frontend Engineer (Remote), Shepherd (YC W24)

California, United States | Feb 2024 - Nov 2024

- Built innovative Generative AI solutions empowering thousands of students in their learning journey
- **Key Achievements:**
 - **Optimized AI Tutor performance, reducing response latency by ~70%,** delivering faster, more responsive user experience
 - **Developed AI-powered features used by thousands of students** for enhanced learning and productivity
- **Key Contributions:**
 - Created comprehensive AI Tutor enabling seamless Q&A, automated note generation, quiz creation, and personalized study materials
 - Built AI Study Planner helping students organize coursework and optimize study schedules
 - Developed exam preparation tools including flashcards and practice quizzes powered by AI
 - Designed AI-based Image Occlusion tool for mastering complex diagrams through interactive learning
 - Led development and optimization of server-side marketing website for performance and SEO
 - Rebuilt and refined core product features focusing on usability, performance, and efficiency
 - Mentored junior developers and conducted knowledge-sharing sessions

Technologies: React.js, Next.js, Vercel AI SDK, OpenAI Models, Node.js, PostgreSQL, Tailwind CSS

Frontend UI/UX Developer (Remote), Big Happy

New York, United States | Dec 2019 - Jul 2023

- Developed high-performance ad units and campaign management systems for global brands
- **Key Achievements:**
 - **Built immersive ad units for world-class brands (Microsoft, Nissan, Samsung) running on millions of devices and generating millions of impressions**
 - **Contributed to building efficient ad campaign pipeline that attracted investors and helped raise \$2.5M in funding**
- **Key Contributions:**
 - Crafted intuitive, responsive interfaces using modern tech stack (React.js, Next.js, Node.js, TypeScript)
 - Developed "Console Dashboard" - a comprehensive React.js campaign management platform with granular access control and real-time analytics
 - Ensured seamless cross-platform user experience across web and mobile
 - Implemented modern UI/UX design principles and accessibility standards
 - Collaborated closely with design, product, and engineering teams in agile environment
 - Mentored junior developers and conducted code reviews
 - Troubleshoot and debugged production issues, providing technical support

Technologies: React.js, Next.js, TypeScript, Node.js, Redux, PostgreSQL, SCSS, Webpack, Jest, Git, Vercel

Education

Bachelor of Technology in Computer Science and Engineering

Yadavindra College of Engineering, Talwandi Sabo, Bathinda, India

Jul 2017 - Jul 2024 | GPA: 8.1/10

- **Major Project:** IoT-based Local Area Network system for controlling home electrical appliances via mobile application
 - **Coursework:** Data Structures & Algorithms, Database Management Systems, Computer Networks, Operating Systems, Software Engineering, Web Technologies
 - **Note:** Program included 3-year break (2019-2023) due to family circumstances, during which gained valuable industry experience at Big Happy
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Technical Skills

Frontend Development

HTML5, CSS3, JavaScript (ES6+), TypeScript, React.js, Next.js, Redux, React Query, Tailwind CSS, Material UI, Bootstrap, SCSS, Webpack, ESLint, Prettier

Backend Development

Node.js, Next.js Server Actions, GraphQL, RESTful APIs, Electron.js, AWS Serverless

AI/ML Technologies

AI Agents, AI Agent Workflows, Tool Calling, Automated Workflows, OpenAI API, Vercel AI SDK, Vercel AI Gateway, Pinecone (Vector Database), LlamaIndex, RAG (Retrieval Augmented Generation)

Databases

PostgreSQL, MongoDB, Supabase

Testing

Unit Testing, Jest, Mocha, Chai

DevOps & Tools

Git, Docker, Vercel, AWS, GitHub Actions

Programming Languages

JavaScript, TypeScript, Rust - (Gaining experience), Python (Basic)

Methodologies

Agile (Kanban), CI/CD, Test-Driven Development

Other

Fullstack Development, Blockchain Concepts, Solana (Learning), Rust (Learning)

Featured Projects

Recoupable - AI Agent for Musicians

Production / CurrentLink: <https://www.recoupable.com>

AI-powered agent platform assisting musicians with career management and growth. Building intelligent agent interfaces using Next.js, Vercel AI SDK, and Tool Calling capabilities.

Features:

- AI agent interfaces with Tool Calling capabilities
- Advanced LLM integrations via Vercel AI Gateway for multi-model orchestration
- Intelligent workflows for music industry professionals
- Scalable backend systems for real-time AI interactions

Tech Stack: Next.js, React.js, Vercel AI SDK, Vercel AI Gateway, Tool Calling, OpenAI, Node.js

UndercoverDevs - AI Education SaaS Platform

Production / Oct 2024 - PresentLink: <https://www.undercoverdevs.com>

An AI-powered educational platform helping students learn more effectively through intelligent study tools.

Features:

- AI-powered Q&A and research assistance
- Automated quiz and flashcard generation from conversations
- PDF document translation and simplification
- Custom question paper generation for any subject/topic
- Interactive topic exploration with AI guidance

Tech Stack: Next.js, React.js, OpenAI, Vercel AI SDK, Pinecone, LlamaIndex, PostgreSQL, Tailwind CSS

Shepherd - AI Learning Platform

Production | Feb 2024 - Nov 2024 Link: <https://www.shepherd.study/dashboard>

Built innovative Generative AI solutions empowering thousands of students in their learning journey. Created comprehensive AI Tutor enabling seamless Q&A, automated note generation, quiz creation, and personalized study materials.

Key Achievements:

- Optimized AI Tutor performance, reducing response latency by ~70%
- Developed AI-powered features used by thousands of students

Tech Stack: React.js, Next.js, Vercel AI SDK, OpenAI, Node.js, PostgreSQL, Tailwind CSS

Console Dashboard - Ad Campaign Command Center

Big Happy | Jan 2021 - Jun 2023

Comprehensive React.js web application for managing advertising campaigns at scale.

Features:

- Campaign management for advertisers, agencies, and publishers
- Granular role-based access control
- Real-time analytics and reporting
- Creative asset management

- Placement tracking and optimization

Tech Stack: React.js, Redux, Node.js, PostgreSQL, Material UI

Learning Journey Projects (Rust & Blockchain)

Core Blockchain in Rust

Learning Project | 2025 Link: <https://github.com/veerbal1/core-blockchain-rust>

A blockchain implementation built from scratch in Rust, featuring proof-of-work consensus, transaction validation, and peer-to-peer networking. Part of my learning journey into Rust and blockchain fundamentals.

Key Features:

- Proof-of-work consensus mechanism
- Transaction validation
- Peer-to-peer networking
- Cryptographic hashing
- Distributed consensus mechanisms

Tech Stack: Rust, Blockchain, Cryptography, P2P Networking

Banking Simulation in Rust

Learning Project | 2024 Link: <https://github.com/veerbal1/bank-manager>

Rust-based banking system demonstrating core financial operations with robust error handling and transaction tracking. Building this to learn Rust's ownership, borrowing, and advanced type systems.

Key Features:

- Account creation and management
- Deposit/withdrawal functionality
- Inter-account money transfers
- Comprehensive transaction history

- Result-based error handling

Tech Stack: Rust, Systems Programming, Financial Logic

Web-Based Wallet

Learning Project | 2025 Link: <https://web-based-wallet-iota-three.vercel.app>

Multi-blockchain cryptocurrency wallet application enabling users to generate, import, and manage wallets for Bitcoin, Ethereum, and Solana. Part of my Solana learning journey.

Key Features:

- Multi-chain support (Bitcoin, Ethereum, Solana)
- HD wallet generation with BIP39/BIP32 standards
- Secure key derivation
- Mnemonic phrase management
- Multiple account generation from single seed phrase

Tech Stack: Next.js 15, React 19, TypeScript, Tailwind CSS, Solana Web3.js, BIP39, Ethers.js, Radix UI

Production Projects

AI Summary Generator (RAG System)

Personal Project | Dec 2023 Link: <https://github.com/veerbal1/rag-ai>

Retrieval Augmented Generation system leveraging Google Search and Large Language Models to generate comprehensive summaries of online content.

Tech Stack: Python, OpenAI API, LangChain, Vector Databases

QuickClinic - Appointment Management System

Personal Project | Dec 2023 Link: <https://github.com/veerbal1/quick-clinic>

Full-stack appointment management application with three user roles (Admin, Doctor, Patient) using QR codes for streamlined check-in.

Features:

- Role-based dashboards
- QR code-based appointment verification
- Real-time availability tracking
- Automated notifications

Tech Stack: Next.js, PostgreSQL, Tailwind CSS

Campus Pulse - Digital Event Ticketing

Personal Project | Dec 2023 Link: <https://github.com/veerbal1/campus-pulse>

College event registration and ticketing platform with admin approval workflows and QR code-based entry management.

Tech Stack: Next.js, PostgreSQL, React.js

Spendwise - Personal Expense Tracker

Personal Project | Dec 2023 Link: <https://github.com/veerbal1/spendwise>

Intuitive web application for tracking daily and monthly expenses with automatic calculations and visual reporting.

Tech Stack: Next.js 14, PostgreSQL, Tailwind CSS

Language Skills

- **Mother Tongues:** Punjabi, Hindi
 - **English:** Proficient (C2 Listening, C1 Reading/Speaking/Writing)
 - **Hindi:** C1 (Proficient)
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Interests & Hobbies

- **Complex Problem Solving:** Passionate about understanding complex systems and solving problems in high-demand, low-supply areas where most people resist

- **Technology Innovation:** Leveraging technology to create practical, impactful solutions that simplify lives and empower communities
- **Spirituality:** Exploring consciousness, meditation, and experiencing the void
- **Continuous Learning:** Always exploring new technologies, frameworks, and paradigms in software engineering and AI