Dr. BR Ambedkar National Institute of Technology Jalandhar

Department of Computer Science and Engineering

Industrial Practical Training (CSTR0300)

SUMMER INTERNSHIP REPORT

Internship Duration
16 June 2025 – 25 July 2025 (6 Weeks)

Organization: **CRAVE BRAINS TECHNOLOGIES & SERVICES**

Domain: **Full Stack Developer**

Submitted by:
Vijay Solanki
(23103162)

Certificate

CRAVE BRAINS
TECHNOLOGIES & SERVICES

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May 17, 2025

INTERNSHIP COMPLETION CERTIFICATE

This is to proudly certify that **Mr. Vijay Solanki (CB58STIN),** a student of **Dr. B. R. Ambedkar National Institute of Technology, Jalandhar**, has successfully completed a **6-week Full Stack Development** training at Crave Brains Technologies and Services. During the training period, he gained hands-on experience with frontend technologies such as React.js, Next.js, and Vue.js; backend frameworks including Node.js and Express.js; and databases like MongoDB, MySQL, and Firebase. He also explored REST APIs, version control using Git, and cloud deployment platforms such as Vercel and AWS. Throughout his internship, **Mr. Solanki** demonstrated **punctuality, diligence, and a keen interest** in learning. He exhibited strong professionalism, attention to detail, and the ability to work both independently and collaboratively. His problem-solving skills significantly contributed to our organization, particularly in enhancing our data-driven decision-making processes.

We wish him every success in life.

With regards,

Kunal Dosi
Founder and CEO

GST IN: 08BIKPD0651D1ZP

Acknowledgement

I would like to express my sincere gratitude to **Crave Brains Technologies and Services** for giving me the opportunity to undertake a six-week internship in Full Stack Development. I am especially thankful to **Mr. Kunal Dosi**, Founder and CEO, for his guidance and mentorship throughout the internship.

I also appreciate the support and collaboration of the development team, whose insights and feedback helped me enhance my technical and problem-solving skills. This internship has been a valuable experience in bridging the gap between academic learning and real-world application.

Lastly, I thank my family and peers for their encouragement and motivation during this journey.

Declaration

I hereby declare that the internship report titled "**Internship Report on Full Stack Development at Crave Brains Technologies and Services**" is a genuine record of work carried out by me, **Vijay Solanki**, during the internship period from **16th June 2025 to 25th July 2025.**

This internship was self-initiated and undertaken independently to gain practical experience in the field of web development. The content of this report is based on my own learning and contributions during the internship and has not been submitted elsewhere for any academic or professional purpose.

TABLE OF CONTENTS

ABSTRACT

This report presents a comprehensive overview of my six-week **full stack development** internship at **Crave Brains Technologies and Services**, Ahmedabad. The internship was designed to bridge the gap between academic learning and industry practices through hands-on experience with modern technologies such as React.js, Next.js, Vue.js, Node.js, Express.js, MongoDB, MySQL, Firebase, and cloud platforms like Vercel and AWS.

The report outlines the organizational background, internship objectives, weekly progress, and detailed contributions to key projects — including a complete food delivery application and an e-commerce platform. It also highlights the technologies learned, skills gained, and challenges encountered throughout the internship. This experience significantly enhanced my technical proficiency, collaborative mindset, and readiness for future roles in full stack development.

INTRODUCTION

This report documents my six-week internship at Crave Brains Technologies and Services, undertaken from 16th June 2025 to 25th July 2025. The internship was self-initiated with the goal of gaining practical exposure to full stack web development in a professional setting.

The program followed a project-based learning model, allowing me to contribute to real-world development tasks under the guidance of experienced mentors. I worked with modern frontend and backend technologies, version control systems, and cloud deployment tools. This experience helped me strengthen my coding skills, understand the software development lifecycle, and gain insights into collaborative workflows used in the tech industry.

ORGANIZATION PROFILE

Crave Brains Technologies and Services is a technology-driven company based in Ahmedabad, Gujarat, specializing in software development, IT consulting, and cloud-based solutions. The organization delivers innovative digital products tailored to client needs across various industries.

Crave Brains fosters a collaborative and agile work culture, encouraging continuous learning and hands-on problem-solving. Its core competencies include full stack web development, cloud infrastructure, and custom software solutions. As part of its commitment to nurturing young talent, the company offers structured internship programs that provide real-world exposure to modern development tools and practices.

INTERNSHIP OVERVIEW

My six-week internship at Crave Brains Technologies & Services, Ahmedabad, from 16 June 2025 to 25 July 2025, provided an immersive and enriching experience in full-stack web development. As a self-initiated engagement, the internship allowed me to work closely with the development team and gain practical exposure to modern technologies including React.js, Next.js, Vue.js, Node.js, Express.js, MongoDB, MySQL, Firebase, and cloud platforms such as Vercel and AWS. This experience helped me bridge the gap between academic learning and the technical demands of professional software development.

Throughout the internship, I was introduced to multiple stages of the development lifecycle — from requirement analysis and UI/UX planning to component structuring, API development, database integration, debugging, testing, and deployment. This comprehensive exposure deepened my understanding of how cross-functional teams collaborate and how each phase contributes to building scalable and maintainable applications. I also gained familiarity with agile methodologies, version control workflows, and peer review practices using Git and GitHub.

One of the most impactful aspects of the internship was contributing to live and internal company projects. Under the mentorship of experienced developers, I participated in building frontend interfaces, developing RESTful APIs, integrating databases, and deploying test-ready builds on cloud infrastructure. These tasks helped me internalize industry coding standards and appreciate the importance of scalability, security, and performance optimization in production-grade applications.

The collaborative and supportive environment encouraged me to ask questions, explore new tools, and continuously refine my problem-solving strategies. Overall, this internship served as a pivotal step in my journey toward becoming a confident and capable full-stack developer. It strengthened my technical foundation, enhanced my professional mindset, and prepared me to take on more complex development responsibilities in future academic and career pursuits.

OBJECTIVES

The primary objective of this internship was to gain practical, industry-level experience in full stack development, allowing me to apply my academic knowledge to real-world software projects. By working closely with the development team at Crave Brains Technologies and Services, I aimed to strengthen my understanding of modern web technologies, professional coding practices, and collaborative development workflows. This hands-on exposure was intended to build my confidence in using widely adopted frameworks such as React.js, Next.js, and Node.js.

Another key objective was to develop a comprehensive understanding of the end-to-end application development lifecycle.
This included:

- Gathering and analyzing project requirements
- Designing frontend component architecture using modern JavaScript frameworks
- Implementing backend routing and API endpoints with Node.js and Express.js
- Structuring and managing databases using MongoDB, MySQL, and Firebase
- Handling asynchronous operations and integrating RESTful APIs
- Deploying full stack applications using cloud platforms like Vercel and AWS
- Using Git for version control and collaborative code management

Through active participation in these stages, I was able to observe and contribute to how development teams plan, build, test, and iterate on software modules in a structured and agile environment.

The internship also focused on enhancing my technical and professional competencies, including:

- Writing clean, modular, and maintainable code
- Debugging and troubleshooting application issues
- Managing time effectively to meet project deadlines
- Documenting code and development processes clearly
- Communicating progress and challenges within a team setting

Additionally, I was encouraged to explore cloud deployment strategies, performance monitoring, and environment configuration — all of which are critical for delivering scalable and reliable web applications.

Finally, the internship aimed to prepare me for future roles in the software industry by exposing me to real-world challenges, such as:

- Handling runtime errors and edge cases
- Optimizing application performance and responsiveness
- Ensuring data integrity and basic security practices
- Managing database queries and schema design
- Delivering features within defined timelines under mentor supervision

By the end of the internship, I aspired to become a more confident, capable, and industry-ready developer, equipped with both technical skills and a deeper understanding of professional software development environments.

TECH STACK USED

During my six-week internship at Crave Brains Technologies and Services, I worked extensively with a modern full stack development toolkit. These technologies were integral to building scalable, responsive, and production-ready web applications. My exposure to both frontend and backend tools gave me a holistic understanding of how professional-grade applications are developed, tested, and deployed.

Frontend Technologies:

- React.js: I learned how to build dynamic and responsive user interfaces using React components, hooks, and state management. I also explored JSX syntax, component lifecycle, and conditional rendering.

- Next.js: I gained experience with server-side rendering (SSR), static site generation (SSG), and routing in Next.js. This helped me understand performance optimization and SEO-friendly practices.

- Vue.js: I explored Vue's reactivity system, directives, and component-based architecture. I used Vue CLI to scaffold projects and practiced building modular UIs.

Backend Technologies:

- Node.js: I used Node.js to create scalable backend services and APIs. I learned about asynchronous programming, event-driven architecture, and working with built-in modules.

- Express.js: I implemented RESTful APIs using Express.js, handled routing, middleware, and error management. This helped me understand how to structure backend logic efficiently.

Databases:

- MongoDB: I worked with MongoDB to store and retrieve unstructured data. I learned how to design schemas, perform CRUD operations, and connect MongoDB with Node.js using Mongoose.

- MySQL: I used MySQL for structured data storage, writing SQL queries for data manipulation, and understanding relational database design.

- Firebase: I explored Firebase Realtime Database and Firestore for lightweight data storage and syncing, especially useful for real-time applications.

Version Control:

- Git & GitHub: I used Git for version control, managing branches, commits, and merges. GitHub was used for collaboration, pull requests, and code reviews, which helped me understand team-based workflows.

Deployment & Cloud Platforms:

- Vercel: I deployed frontend applications using Vercel, learning about CI/CD pipelines, environment variables, and build optimization.

- AWS (Amazon Web Services): I explored AWS EC2 for hosting backend services and learned the basics of cloud infrastructure, including SSH access, server setup, and deployment.

Supporting Tools:

- Postman: Used for testing APIs, sending requests, and validating responses during backend development.

- Visual Studio Code: My primary code editor, where I utilized extensions for linting, formatting, and Git integration.

- Figma (if applicable): Occasionally used for UI reference and design-to-code translation.

This diverse tech stack significantly enhanced my technical proficiency and gave me real-world insight into how modern web applications are built and maintained.

WEEKLY WORK SUMMARY

Week 1 : Onboarding & Environment Setup

- Attended orientation sessions and got introduced to the company's development workflow and team structure.
- Set up the development environment including installation of **Node.js**, **MongoDB**, **MySQL**, **VS Code**, and **Git**.
- Explored the company's existing codebase and internal documentation to understand project architecture.
- Completed basic tasks to get familiar with **React.js** and **Next.js** component structures.
- Participated in daily stand-up meetings and began using Git for version control.

Week 2 : Frontend Development Foundations

- Built reusable UI components using **React.js** and **Vue.js** for internal dashboards.
- Learned about **state management**, **props**, and **component lifecycle** in React.
- Implemented responsive layouts using **CSS Flexbox** and **Tailwind CSS**.
- Integrated mock APIs to simulate data flow between frontend and backend.
- Received feedback from mentors and improved code readability and structure.

Week 3 : Backend Development & API Integration

- Started working with **Node.js** and **Express.js** to build RESTful APIs.
- Connected backend services to **MongoDB** and **MySQL** databases.
- Learned about **CRUD operations**, **middleware**, and **routing** in Express.
- Used **Postman** to test API endpoints and validate request/response cycles.
- Collaborated with frontend developers to integrate APIs into UI components.

Week 4 : Full Stack Integration & Authentication

- Worked on full stack features combining frontend and backend modules.
- Implemented **user authentication** using JWT and session management.
- Handled **form validation**, **error handling**, and **input sanitization**.
- Explored **Firebase** for real-time data syncing and lightweight backend services.
- Participated in code reviews and learned about **secure coding practices**.

Week 5 : Deployment & Optimization

- Deployed frontend projects using **Vercel** and backend services on **AWS EC2**.
- Configured **environment variables**, **build scripts**, and **deployment pipelines**.
- Monitored application performance and optimized load times and API response.
- Explored **GitHub Actions** for basic CI/CD automation.
- Documented deployment steps and created README files for project repositories.

Week 6 : Finalization & Reporting

- Finalized project modules and ensured all features were tested and functional.
- Prepared internal documentation for handover and future development.
- Presented project outcomes to mentors and received final feedback.
- Collected internship certificate and offer letter for academic submission.
- Began compiling the internship report and reflecting on key learnings.

DETAILED PROJECTS WORK/CONTRIBUTION

Project 1: Food Delivery Web Application (End-to-End)

Objective:

To design and develop a fully functional food delivery platform that allows users to browse restaurants, view menus, place orders, and track delivery status.

Tech Stack:

- Frontend: React.js, Tailwind CSS
- Backend: Node.js, Express.js
- Database: MongoDB
- Deployment: Vercel (Frontend), AWS EC2 (Backend)
- Tools: Git, Postman, JWT, Cloudinary

Key Contributions:

- Designed the complete UI using React.js with reusable components for restaurant listings, menu items, cart, and order tracking.
- Implemented user authentication using JWT, including login, registration, and session management.
- Developed RESTful APIs for user management, order placement, and restaurant data retrieval using Express.js.
- Integrated MongoDB for storing user profiles, orders, and menu data with Mongoose schemas.
- Implemented image upload functionality for restaurant and food item images using Cloudinary.
- Deployed the frontend on Vercel and backend on AWS EC2, configuring environment variables and database connections.
- Conducted end-to-end testing using Postman and browser-based tools to ensure smooth user experience and API reliability.

Outcome:

The project served as a complete demonstration of my ability to build a scalable, full stack application from scratch. It also helped me understand the importance of clean architecture, modular code, and secure API practices.

Project 2: E-Commerce Website (Collaborative Development)

Objective:

To contribute to the development of an e-commerce platform that supports product browsing, cart management, and order processing.
Tech Stack:

- Frontend: Next.js, Tailwind CSS
- Backend: Node.js, Express.js
- Database: MySQL
- Deployment: Vercel (Frontend), AWS EC2 (Backend)
- Tools: GitHub, Postman, Stripe API (for payments)

Key Contributions:

- Built dynamic product listing and product detail pages using Next.js with server-side rendering for SEO optimization.
- Integrated product filtering and search functionality using query parameters and dynamic routing.
- Developed backend APIs for product management, user authentication, and order processing.
- Worked on integrating Stripe API for secure payment processing and order confirmation.
- Collaborated with team members via GitHub, resolving merge conflicts, reviewing pull requests, and maintaining clean commit history.
- Participated in sprint planning and daily stand-ups to align development goals and track progress.

Outcome:

This project enhanced my understanding of collaborative development, payment gateway integration, and the importance of performance optimization in e-commerce platforms.

Additional Contributions

Component & Backend Module Development

In addition to the two major projects, I contributed to several internal and client-facing web applications by developing specific components and backend modules. These included:

- Admin Dashboard Widgets: Created reusable components for analytics dashboards, including charts, tables, and filters using React.js and Chart.js.
- Authentication Modules: Built login/signup forms with form validation, error handling, and secure password hashing using bcrypt.
- API Documentation: Documented API endpoints using Postman collections and markdown-based README files for developer onboarding.
- Database Optimization: Refactored MongoDB queries for better performance and implemented indexing for faster data retrieval.
- Bug Fixes & Code Reviews: Identified and resolved UI/UX bugs, improved code readability, and participated in peer code reviews.

Learning Highlights from Project Work

- Gained confidence in building and deploying full stack applications independently.
- Understood how to structure scalable backend services and modular frontend components.
- Learned to work with both NoSQL (MongoDB) and relational databases (MySQL) in real-world scenarios.
- Improved my ability to collaborate using Git workflows, including branching, merging, and pull requests.
- Developed a deeper appreciation for clean code practices, documentation, and agile development.

CONCLUSION

The six-week internship at Crave Brains Technologies and Services has been a transformative experience that significantly enriched my technical and professional development. It provided me with a structured yet flexible environment to apply my academic knowledge to real-world projects, deepening my understanding of full stack web development. Through hands-on involvement in both frontend and backend tasks, I gained practical experience with modern frameworks, databases, and deployment tools that are widely used in the industry.

Working on live projects such as a food delivery application and an e-commerce platform allowed me to contribute meaningfully to real development cycles — from planning and coding to testing and deployment. I also learned how to collaborate effectively within a team, follow agile workflows, and maintain clean, scalable code. The mentorship I received helped me grow not just as a developer, but as a problem-solver and communicator.

This internship has laid a strong foundation for my future in software development. Moving forward, I aim to build on this experience by exploring advanced topics such as microservices architecture, DevOps practices, and cloud-native application design. I also plan to contribute to open-source projects and pursue opportunities that challenge me to innovate and grow as a full stack developer.

In summary, this internship has not only strengthened my technical skills but also shaped my mindset for continuous learning and professional excellence. It has prepared me to take on more complex responsibilities and contribute confidently to future academic and industry projects.

*****END*****