

# **AN INTERNSHIP REPORT**

A report submitted in partial fulfilment of the requirements for the  
Industry Internship Program

***Submitted By***

Naresh Kumar M – 312322205111

**Under the Supervision Of**

Mr. P.V. Sidharth

 **complyance**

Ekkatuthangal, Chennai

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF TECHNOLOGY**

**IN**

**INFORMATION TECHNOLOGY**



**St. JOSEPH'S COLLEGE OF ENGINEERING**

(An Autonomous Institution)

St. Joseph's Group of Institution OMR,

Chennai 600 119

ANNA UNIVERSITY :: CHENNAI 600 025

**Internship date : 16-06-2025 to 16-12-2025**

# TABLE OF CONTENTS

CHAPTER NO	TITLE	PAGE NO.
	<b>ACKNOWLEDGEMENT</b>	<b>iii</b>
<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
	1.1 OVERVIEW OF THE COMPANY	1
	1.2 OBJECTIVE OF THE INTERNSHIP	2
<b>2</b>	<b>COMPANY PROFILE</b>	<b>3</b>
<b>3</b>	<b>INTERNSHIP DETAILS</b>	<b>5</b>
<b>4</b>	<b>PROJECT DETAILS</b>	<b>7</b>
	4.1 WEBSITE DEVELOPMENT	7
	4.2 USER INTERFACE AND EXPERIENCE DESIGN	7
	4.3 DATA MANAGEMENT AND API INTEGERATION	8
	4.4 PERFORMANCE OPTIMIZATION AND RESULTS	9
	4.5 DATABASE MANAGEMENT	10
<b>5</b>	<b>TECHNOLOGIES USED</b>	<b>12</b>
	5.1 HTML	12
	5.2 CSS	12
	5.3 JAVASCRIPT	13
	5.4 REACT.JS	13
	5.5 GOOGLE CLOUD PLATFORM	14
	5.6 SUPABASE	14
	5.7 HUBSPOT	15
	5.8 MICROSOFT CLARITY	15
	5.9 GITHUB	15
	5.10 VERCEL	16
	5.11 N8N	16
	5.12 SCREAMING FROG	16
<b>6</b>	<b>SKILLS ACQUIRED</b>	<b>17</b>
<b>7</b>	<b>CHALLENGES FACED</b>	<b>19</b>
<b>8</b>	<b>CONCLUSION</b>	<b>21</b>
	<b>ANNEXURES</b>	<b>23</b>

## ACKNOWLEDGEMENT

At the outset we would like to express our sincere gratitude to the beloved **Chairman, Dr. Babu Manoharan, M.A., M.B.A., Ph.D.**, for his constant guidance and support.

We would like to express our heartfelt thanks to our respected **Managing Director, Mr. B. Shashi Sekar, M.Sc.**, for her kind encouragement and blessings.

We wish to express our sincere thanks and gratitude to our **Executive Director, Mrs. S. Jessie Priya, M.Com.**, for providing ample facilities in the institution.

We express our deepest gratitude and thanks to our beloved **Principal, Dr. Vaddi Seshagiri Rao, M.E., M.B.A., Ph.D., F.I.E.**, for his inspirational ideas during the internship.

We are immensely grateful to our esteemed **Dean School of Computing, Mrs. G. Lathaselvi, B.E., M.E., (Ph.D.)**, for her invaluable support and academic guidance throughout this endeavor.

We wish to express our sincere thanks and gratitude to **Dr. Heltin Genitha M.E., Ph.D, Head of the department**, Department of Information Technology, St. Joseph's College of Engineering for her guidance and assistance in solving the various intricacies involved in the project.

I am deeply grateful to **Compliance** for affording me the invaluable opportunity to intern with them. Under the mentorship of **Mr. P.V. Sidharth, GTM Engineer**, I have experienced profound personal and professional growth. Their unwavering guidance, encouragement, and constructive feedback have been pivotal in shaping my journey during this internship.

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 OVERVIEW OF THE COMPANY**

Compliance is a modern regulatory automation and compliance management company dedicated to simplifying the complexity of global business regulations. It empowers organizations to meet evolving legal, tax, and operational requirements through intelligent automation and real-time monitoring. By merging advanced technology with deep regulatory insight, Compliance helps businesses stay compliant across multiple jurisdictions with ease and efficiency.

The platform is built on a cloud-native, API-first architecture that unifies compliance workflows and automates rule enforcement. It dynamically adapts to regional law changes, ensuring continuous adherence to frameworks such as data privacy mandates, e-invoicing standards, and tax regulations. Designed for flexibility and scalability, it serves both startups expanding globally and large enterprises managing complex, multi-country operations.

Compliance differentiates itself through a developer-friendly design, modular structure, and transparency. Every process within the platform is auditable and traceable, offering organizations complete visibility and control. Its automated alerts, dashboards, and reporting systems reduce manual effort, streamline workflows, and enhance accountability.

Serving sectors like fintech, SaaS, logistics, and e-commerce, Compliance provides integrated solutions for tax, privacy, trade, and supplier compliance. Its intelligent APIs embed compliance directly into business systems, transforming it from a reactive burden into a proactive advantage. With ongoing innovation in AI and analytics, the company is advancing toward predictive compliance—where regulatory risks are detected and resolved before they impact operations.

At its core, Compliance upholds the highest standards of trust, governance, and security through strong data protection, access controls, and audit mechanisms. By redefining how organizations manage compliance, it enables businesses to operate globally with confidence, agility, and peace of mind.

## **1.2 OBJECTIVE OF THE INTERNSHIP**

The primary objective of this internship was to gain in-depth practical experience in web development, system optimization, and technical implementation within a real-time organizational environment. As a GTM Engineer Intern, my role involved enhancing the company's website architecture, resolving technical issues, improving performance metrics, and ensuring overall operational efficiency. The internship was aimed at bridging the gap between academic learning and professional execution by allowing me to apply my technical knowledge to real-world projects.

During the internship period, I worked extensively with Next.js to develop, maintain, and optimize the company's website. I was responsible for identifying and fixing technical errors, implementing responsive design principles, and ensuring that the website functioned seamlessly across multiple devices and browsers. I also created new landing pages that aligned with the company's objectives and ensured a consistent user experience across all interfaces.

In addition to web development, I worked on optimizing page performance and improving site structure for faster load times and smoother navigation. I introduced and configured new schema types in Sanity CMS, which helped enhance structured data representation and improve search visibility. To further support data-driven decision-making, I integrated and managed multiple APIs, including HubSpot, Microsoft Clarity, and Google Analytics, enabling better tracking, analysis, and reporting of user interactions and website performance.

Throughout the internship, I focused on improving technical efficiency, maintaining code quality, and ensuring best practices in website deployment and maintenance. The experience allowed me to understand the complete web development lifecycle — from front-end optimization and API integration to performance analysis and deployment. It also strengthened my problem-solving, debugging, and analytical skills by exposing me to real-time challenges in website performance and scalability.

Overall, this internship provided me with a comprehensive understanding of how modern web technologies and frameworks are used to build scalable, efficient, and user-friendly web applications. It gave me valuable exposure to collaborative workflows, version control, and real-world project management practices, laying a strong foundation for my professional growth as a developer.

## **CHAPTER 2**

### **COMPANY PROFILE**

Compliance is a leading technology company that specializes in building intelligent, scalable, and automated compliance infrastructure for modern businesses. The company focuses on simplifying the complex landscape of global regulations through innovative, API-driven solutions that help organizations maintain compliance effortlessly across multiple jurisdictions. By combining deep domain expertise with advanced technology, Compliance enables businesses to stay compliant, efficient, and future-ready in an ever-evolving regulatory environment.

Headquartered in Chennai, Compliance has established itself as a trusted name in the field of compliance automation, offering solutions that integrate seamlessly with existing business ecosystems. The company's platform is built on a cloud-native and API-first architecture, allowing enterprises to unify, automate, and manage diverse compliance workflows efficiently. It empowers developers, operations teams, and compliance professionals to collaborate effectively while maintaining accuracy, transparency, and regulatory consistency.

Compliance provides a wide range of services, including website development, system optimization, SEO management, structured data implementation, and analytics integration, all of which contribute to enhancing an organization's digital performance and compliance readiness. Its platform incorporates smart monitoring tools, schema management, and performance optimization techniques that ensure high reliability, scalability, and visibility for businesses operating across sectors.

The company's strength lies in its ability to combine technology, design, and regulatory logic into a single, streamlined system. Its solutions are modular and customizable, enabling organizations to implement specific compliance workflows or expand into full-scale enterprise-level systems as their needs grow. With support for major integrations such as HubSpot, Microsoft Clarity, and Google Analytics, Compliance ensures seamless connectivity and intelligent data flow across platforms.

Driven by innovation and precision, Compliance continues to focus on research and development to enhance automation, improve API capabilities, and deliver predictive insights for compliance and performance management. The company upholds strong principles of data security, transparency, and operational excellence, ensuring trust and integrity in every solution it delivers.

By redefining compliance through automation and technology, Compliance plays a vital role in helping businesses navigate regulatory complexity while accelerating their digital transformation journey. The company's commitment to innovation, performance, and scalability positions it as a forward-thinking leader in the compliance technology ecosystem.

## **CHAPTER 3**

### **INTERNSHIP DETAILS**

During a one-month internship at Compliance, the student gained valuable hands-on experience in the field of web development and technical optimization, working as a GTM Engineer Intern. This internship provided practical exposure to modern web technologies, performance enhancement techniques, and API integrations within a professional and collaborative environment.

The internship began with an introduction to Compliance's development workflow, project architecture, and the tools used for managing website operations. The student was assigned to the web engineering team responsible for maintaining and optimizing the company's main website. The primary objective of the internship was to enhance website performance, improve SEO visibility, fix existing technical issues, and contribute to the development of new, responsive landing pages.

Throughout the internship, the student worked extensively with Next.js, a modern React-based framework, to build and optimize web pages for improved speed and scalability. The work involved debugging and resolving technical errors, improving responsiveness across devices, and ensuring that each page adhered to accessibility and usability standards. The student also played a key role in integrating structured data by implementing new schema types in Sanity CMS, which helped improve the website's search visibility and structured content representation.

In addition to development, the student focused on technical optimization and analytics integration. APIs such as HubSpot, Microsoft Clarity, and Google Analytics were integrated to enable advanced tracking and reporting of user behavior, traffic insights, and engagement metrics. These integrations contributed to data-driven decision-making and allowed the company to monitor the performance of its digital assets effectively.

The internship also emphasized SEO improvement and page speed optimization, where the student analyzed the website's performance metrics and implemented enhancements to reduce load time and improve Core Web Vitals. By the end of the internship, the website demonstrated noticeable improvements in speed, responsiveness, and overall technical health.



This experience provided the student with a comprehensive understanding of real-world web development processes — from frontend optimization and CMS management to analytics integration and API handling. The internship not only strengthened technical proficiency in frameworks like Next.js and tools like Sanity CMS but also enhanced problem-solving, debugging, and collaborative development skills. Through this internship, the student gained valuable insights into building scalable, efficient, and high-performing web applications aligned with modern industry standard.

## **CHAPTER 4**

### **PROJECT DETAILS**

#### **4.1 WEBSITE DEVELOPMENT**

During my internship at Compliance, my primary project centered on the development and enhancement of the company's official website using Next.js. The main goal was to ensure that the website performed seamlessly, maintained scalability, and provided a better user experience across devices and browsers. Next.js, being a React-based framework, allowed the implementation of server-side rendering and static site generation, which together contributed to faster load times and improved SEO performance.

My work began with analyzing the existing codebase to identify inefficiencies, redundant logic, and unoptimized components. I fixed several technical errors in the frontend structure, ensuring that all components were modular, reusable, and properly aligned with the company's development standards. I also worked on restructuring the page routing mechanism within Next.js to ensure better logical grouping and faster build performance.

A major part of my role involved creating new landing pages for specific campaigns, announcements, and resource sections. Each landing page was developed with precision to ensure both visual consistency and technical efficiency. I collaborated with the content and design teams to ensure that every component aligned with the company's brand style guide and accessibility standards.

Additionally, I implemented responsive design techniques to ensure that the website performed well on all screen sizes, from mobile devices to wide monitors. Using modern CSS methodologies and the built-in features of Next.js, such as Image Optimization and Dynamic Imports, I significantly improved load times and responsiveness. This comprehensive development work formed the foundation for all subsequent improvements in design, integration, and performance.

## **4.2 USER INTERFACE AND EXPERIENCE DESIGN**

The internship also allowed me to contribute substantially to the UI/UX design and development process of the company's web platform. Using Figma and FigJam, I participated in designing intuitive layouts, structuring component hierarchies, and improving the navigation experience. My design approach was based on ensuring both aesthetic appeal and functional clarity, making the website accessible and easy to navigate for all users.

I began by studying the existing user interface and identifying areas where the design could be more cohesive or engaging. Based on this, I developed multiple Figma prototypes to test new layouts and visual arrangements. These mockups were reviewed collaboratively with the development and management teams before being translated into production-ready Next.js components.

To enhance efficiency and accuracy during development, I incorporated AI-assisted tools such as Cursor, GitHub Copilot, and n8n. These tools helped automate repetitive coding tasks, improve component generation speed, and maintain code quality. They also reduced manual dependency during debugging and UI refinements.

My design contributions focused on improving color contrast, consistent padding, and typography across all sections of the website. By implementing these refinements, the website not only became more visually appealing but also aligned with accessibility standards such as WCAG guidelines. This phase of the project helped me strengthen my understanding of how design systems integrate with modern frameworks and contribute to overall user satisfaction.

## **4.3 DATA MANAGEMENT AND API INTEGRATION**

Another crucial part of my project involved working with data management systems and API integrations to improve the functionality, automation, and tracking capabilities of the website. I integrated Supabase, a modern open-source backend solution, to manage dynamic content updates and store relevant visitor information in real time. Supabase provided a secure, fast, and scalable alternative to traditional database management approaches, making it an excellent choice for dynamic website operations.

In addition, I integrated Google Cloud APIs, specifically the Instant Indexing API, to enable real-time submission of web pages to major search engines such as Google, Bing, and Yandex. This automation ensured that newly created or updated pages were instantly indexed and available in search results, dramatically improving discoverability and reducing manual indexing delays.

One of my major accomplishments during this phase was the creation of a custom dashboard that tracked user visits from large language models (LLMs) such as ChatGPT, Gemini, and Perplexity. The dashboard provided valuable analytics about referral sources, engagement duration, and user interaction paths. These insights helped the company understand how AI-based platforms contributed to organic traffic growth and user conversions.

I also developed an indexing dashboard that allowed authorized users to instantly submit or refresh website URLs to search engines through an automated workflow. This integration streamlined the SEO process, ensuring faster updates and consistent online visibility. The combination of Supabase and cloud APIs created a powerful data ecosystem that supported both operational automation and analytical decision-making.

## **4.4 PERFORMANCE OPTIMIZATION AND RESULTS**

Throughout the internship, a major focus of my project was performance optimization—ensuring the website achieved the highest possible speed, stability, and responsiveness. I performed a thorough analysis of Core Web Vitals using tools like Google Lighthouse and PageSpeed Insights to identify bottlenecks that affected load times and user experience.

Based on the analysis, I implemented optimizations such as image compression, lazy loading, code splitting, and caching strategies using Next.js capabilities. I also optimized the use of server-side rendering to ensure that the website content loaded efficiently even on lower bandwidth connections. These optimizations significantly improved the First Contentful Paint (FCP) and Largest Contentful Paint (LCP) metrics.

Additionally, I restructured certain API calls and reduced render-blocking scripts to improve interaction latency. The implementation of asynchronous functions and prefetching further enhanced the performance of dynamic pages.

Combined with schema updates and SEO refinements, these changes resulted in noticeable improvements in both load speed and search ranking.

By the end of the internship, the website demonstrated measurable growth in organic visibility, improved search indexing time, and higher visitor engagement. The optimizations also contributed to increased traffic conversion and enhanced user retention. This project provided me with a holistic understanding of how front-end engineering, API automation, and design integration come together to build a truly optimized web experience.

(JavaScript Object Notation) plays a crucial role in data interchange between the client and server, facilitating seamless communication by structuring data in a format that is easy to read and parse.

On the server side, Express.js handles routing, middleware, and data processing, ensuring that requests from the client are processed efficiently. Together, these technologies enable the creation of dynamic, responsive, and robust web applications, where the server side manages data, authentication, and business logic, ensuring the smooth functioning of the website for end-users. This setup provides a powerful foundation for modern web development, balancing performance, scalability, and maintainability.

## **4.5 DATABASE MANAGEMENT**

Database management is a critical component of web development, ensuring that data is stored, retrieved, and manipulated efficiently. In a website built using technologies like HTML, CSS, JavaScript, JSON, React, Express.js, and Node.js, the database serves as the backbone for dynamic content and user interactions.

Node.js and Express.js are used on the server side to handle requests and communicate with the database. This interaction often involves using a database like MongoDB or MySQL, which are popular choices for handling large volumes of data in web applications. Express.js serves as the middleware, facilitating smooth communication between the server and the database.

JSON is crucial in this setup for exchanging data between the server and the client in a lightweight, readable format. When a user interacts with the website, such as submitting a form or retrieving information, the server processes the request and interacts with the database. The retrieved data is then sent back to the client, often formatted in JSON, where React and JavaScript render it dynamically on the webpage.

This approach ensures that the website remains responsive and scalable, with the database efficiently managing all data-related operations, from storing user information to processing complex queries, all while maintaining a seamless user experience.

## CHAPTER 5

### TECHNOLOGIES USED

During my internship at Compliance, I worked with a wide range of technologies, frameworks, and tools that collectively contributed to the design, development, optimization, and monitoring of the company's web platform. The combination of front-end, back-end, analytics, and automation tools provided me with a holistic understanding of how modern web applications are developed, deployed, and maintained. Each technology played a vital role in ensuring that the website was fast, responsive, scalable, and compliant with SEO and performance standards.

#### 5.1 HTML (HyperText Markup Language)

HTML served as the structural foundation for all web pages developed during the internship. It provided the essential building blocks that defined the layout, content, and organization of the website. Using semantic HTML elements such as `<header>`, `<section>`, `<article>`, and `<footer>`, I ensured the website maintained a clear structure, making it accessible and search-engine friendly. Proper structuring also improved page readability, enhanced SEO performance, and facilitated better integration with accessibility tools like screen readers.

During the website's development and optimization phases, I implemented HTML best practices to reduce code redundancy, improve maintainability, and ensure compliance with W3C standards. Meta tags and structured data (schema markup) were also integrated to provide search engines with additional context about the website's content, improving its discoverability and ranking potential.

#### 5.2 CSS (Cascading Style Sheets)

CSS played a crucial role in defining the website's visual presentation and responsiveness. I used both traditional CSS and modular CSS-in-JS styling techniques to achieve a consistent and scalable design. Using Flexbox and CSS Grid, I ensured that the website layout adapted seamlessly to various screen sizes, creating a uniform and responsive experience across desktops, tablets, and mobile devices.

Additionally, I implemented media queries to fine-tune the design for different viewport dimensions, ensuring optimal readability and usability. Animations, hover effects, and smooth

transitions were also added to enhance the user experience. By maintaining a separate and organized styling structure, I ensured that the visual components were easy to maintain and modify during subsequent development cycles.

### **5.3 JavaScript (JS)**

JavaScript was used extensively to implement interactivity and dynamic functionality within the website. I utilized core JavaScript features to manipulate the DOM, handle user interactions, and perform asynchronous operations such as API calls and data fetching. Event-driven programming allowed for real-time content updates, improving the responsiveness of the web pages.

As part of optimization, I ensured that JavaScript code followed modern ES6 standards, employing features like arrow functions, destructuring, and promises for cleaner and more maintainable scripts. JavaScript's versatility also enabled seamless integration with third-party APIs like HubSpot, Clarity, and Google Analytics, which helped monitor and improve user engagement and performance metrics.

### **5.4 React.js**

React.js was the backbone of the website's user interface layer. Its component-based architecture enabled the creation of modular, reusable, and efficient UI components. Each part of the website — including navigation bars, forms, and content sections — was developed as an independent React component, promoting reusability and easier maintenance.

I utilized React hooks such as `useState` and `useEffect` to manage state and side effects, ensuring that data updates and API responses were handled efficiently. The use of React Router also allowed for smooth navigation between pages without requiring full reloads, significantly improving the overall user experience. React's virtual DOM mechanism contributed to faster rendering and better performance, even when handling dynamic and data-driven pages.

### **5.5 Next.js**

Next.js was the primary framework used for the development and optimization of the Compliance website. It provided advanced features like server-side rendering (SSR) and static site generation (SSG), which greatly enhanced the website's performance, SEO visibility, and scalability. I



implemented these features to ensure that content was pre-rendered efficiently, leading to faster initial load times and improved search engine rankings.

Next.js also simplified routing and file management by using its built-in page-based routing system. This allowed me to create new pages and landing sections effortlessly. Furthermore, I utilized API routes within Next.js to handle backend logic and API interactions directly within the same project environment. The combination of React's flexibility and Next.js's server-rendering capability resulted in a high-performance web application that aligned with industry standards.

## **5.6 Google Cloud Platform (GCP)**

Google Cloud services were used to enhance automation and indexing operations. The Google Instant Indexing API was a key component in automating the submission of web pages to search engines. This feature helped ensure that new or updated pages were indexed immediately, improving the website's visibility and discoverability in search results.

In addition, other Google Cloud APIs were used to streamline workflows such as monitoring, data retrieval, and integration with analytics tools. The cloud-based infrastructure also supported scalable and secure deployment of data-intensive tasks, contributing to better system reliability and performance.

## **5.7 Supabase**

Supabase served as the backend and database management system for the project. It offered a powerful combination of PostgreSQL, real-time subscriptions, and authentication services. I used Supabase to store and manage user activity data, track API responses, and handle dynamic content updates efficiently.

Its integration with Next.js allowed seamless communication between the client and server sides using RESTful APIs. The real-time features of Supabase ensured that updates to dashboards and tracking tools were reflected immediately without requiring manual refreshes. Supabase's modern interface and simplicity helped reduce development time while maintaining scalability and security.

## **5.8 HubSpot**

HubSpot was integrated into the website to manage leads, forms, and user interactions efficiently. Through the HubSpot API, I connected the company's contact forms and landing pages to the CRM system, ensuring that all captured data flowed directly into the lead management pipeline. This integration provided valuable insights into user engagement, allowing the team to make data-backed decisions regarding content performance and customer behavior.

In addition, HubSpot tracking scripts were optimized to ensure they did not impact site speed while maintaining accurate analytics and event tracking. This helped balance technical performance with business data needs.

## **5.9 Microsoft Clarity**

Microsoft Clarity was utilized to analyze user interaction patterns on the website. It provided heatmaps, session recordings, and user engagement data, which were instrumental in understanding how visitors navigated through different pages. These insights helped identify usability issues, broken elements, or confusing navigation paths.

By integrating Clarity scripts directly into the Next.js pages, I ensured real-time behavior tracking without disrupting the site's performance. The findings from Clarity were used to fine-tune layouts, adjust UI components, and improve overall user experience.

## **5.10 GitHub**

GitHub was the primary version control and collaboration platform used during the internship. It allowed for efficient management of code versions, issue tracking, and documentation. I created and managed multiple branches for feature development, bug fixes, and updates, following best practices in collaborative development.

Through GitHub, I also utilized pull requests and commit reviews, which ensured that code changes were systematically reviewed before deployment. This version-controlled workflow ensured code stability and accountability throughout the project lifecycle.

## **5.11 Vercel**

Vercel was used for hosting and deploying the Next.js website. As the official deployment platform for Next.js, Vercel provided a seamless integration for continuous deployment (CD) and testing. Each commit pushed to GitHub triggered an automated deployment to the staging environment, ensuring quick testing and faster delivery cycles.

Vercel's global edge network allowed for fast content delivery and low-latency access for users across regions. Its built-in analytics also helped monitor page performance and error tracking post-deployment.

## **5.12 n8n**

n8n was an automation tool that played a key role in connecting APIs and streamlining workflows. I used n8n to automate tasks such as data synchronization between the website and external tools, instant page indexing, and report generation. It acted as a bridge between various systems like Google Cloud, Supabase, and HubSpot, ensuring that processes ran automatically without manual intervention.

This low-code automation platform greatly enhanced operational efficiency and reduced repetitive workloads, allowing more focus on development and optimization tasks.

## **5.13 Screaming Frog**

Screaming Frog SEO Spider was used for in-depth website crawling and auditing. It helped identify technical issues such as broken links, missing alt tags, incorrect redirects, and unoptimized titles and descriptions. I ran several crawls during the optimization phase to ensure the website adhered to best SEO practices.

The detailed reports generated by Screaming Frog provided actionable insights that guided many structural and metadata improvements throughout the project. This ensured that every page on the site was technically sound and optimized for search engines.

## **CHAPTER 6**

### **SKILLS ACQUIRED**

During my internship at Compliance as a GTM Engineer Intern, I gained significant hands-on experience in modern web development, performance optimization, and API integration. The internship allowed me to apply my technical knowledge to real-world projects, improving both my coding proficiency and my understanding of full-stack web application architecture.

I strengthened my expertise in HTML, CSS, and JavaScript, which served as the core technologies for structuring, styling, and adding interactivity to the company's website. Working with HTML5 semantic elements, I learned to create well-structured and accessible layouts optimized for SEO. Through CSS3 techniques such as Flexbox, Grid, and media queries, I developed responsive, device-independent web designs that improved usability across various screen sizes. Additionally, I enhanced my knowledge of JavaScript for DOM manipulation, event handling, and asynchronous programming, enabling me to build dynamic and interactive front-end features.

A major skill acquired during the internship was proficiency in React.js and Next.js, which I used extensively for building and optimizing the company's web pages. I learned how to structure projects using component-based architecture, implement server-side rendering (SSR) and static site generation (SSG) for faster load times, and manage state efficiently using React Hooks. I also gained experience in debugging, routing, and improving Core Web Vitals — skills that directly impacted the website's performance and SEO health.

Beyond front-end development, I expanded my understanding of API integrations and backend connectivity through tools like Supabase, HubSpot, Microsoft Clarity, and Google Analytics. These integrations deepened my knowledge of real-time data handling, API authentication, and analytics tracking. I learned how to collect, visualize, and interpret user behavior data, which helped in performance tuning and decision-making. My experience with Google Cloud APIs, particularly the Instant Indexing API, taught me how automation and cloud technologies can enhance website visibility and streamline deployment processes.

In addition to core development skills, I also acquired valuable knowledge in technical SEO optimization using tools such as Semrush and Screaming Frog. I learned how to identify crawl issues, fix meta tag duplications, optimize schema markups, and improve search engine indexing. These experiences gave me a strong foundation in balancing technical performance with discoverability, ensuring the website achieved high visibility and ranking potential.

My internship also strengthened my problem-solving and collaboration skills. Working in a fast-paced environment taught me to manage multiple technical tasks efficiently, adhere to coding standards, and maintain version control using GitHub. I gained practical exposure to deployment workflows on Vercel, automation processes using n8n, and AI-assisted development through tools like Cursor and GitHub Copilot, which improved my speed and accuracy in coding.

Overall, this internship enhanced my ability to think critically and solve real-world engineering challenges. It not only improved my technical proficiency in web development frameworks and cloud technologies but also helped me develop a structured, performance-driven approach to building scalable, optimized, and user-friendly web applications.

## CHAPTER 7

### CHALLENGES FACED

During my internship at Compliance as a GTM Engineer Intern, I encountered several challenges that tested my technical knowledge, adaptability, and problem-solving skills. These challenges provided valuable learning experiences and helped me grow as a developer by exposing me to real-world complexities in web performance, integration, and optimization.

One of the initial challenges I faced was understanding the company's existing website architecture built with Next.js. The project involved multiple interconnected components, server-side rendering mechanisms, and API integrations that required in-depth analysis before making any changes. Since this was my first time working on a large-scale production environment, I initially found it difficult to navigate the codebase and understand how different modules interacted. To overcome this, I spent considerable time exploring the repository structure, reviewing documentation, and consulting with team members. Gradually, I developed a clear understanding of the architecture, which enabled me to contribute effectively to bug fixing, performance improvement, and new feature implementation.

Another significant challenge was optimizing the website's performance while maintaining design consistency and responsiveness. The website had several pages with large assets and multiple API calls that slowed down load times. Achieving better Core Web Vitals scores required a balance between visual quality and performance. I experimented with image compression, lazy loading, and code splitting techniques to enhance page speed without compromising aesthetics. This process required continuous testing using tools like Google Lighthouse and Semrush, where small adjustments in CSS and component rendering resulted in noticeable improvements in performance metrics.

Integrating external APIs such as HubSpot, Clarity, Google Analytics, and Google Cloud Instant Indexing API also presented technical challenges. Each API had unique authentication mechanisms, rate limits, and data formats, which required careful handling to ensure smooth communication with the website. I faced issues with asynchronous data retrieval and inconsistent response times during initial testing. To resolve these issues, I implemented proper error handling, optimized API calls, and used caching techniques to minimize redundant requests. This experience helped me gain a deeper understanding of asynchronous programming and RESTful API

management.

Another key challenge was working with Supabase and managing dynamic data. Since Supabase provided a real-time backend system, I had to ensure that updates reflected accurately across dashboards and tracking tools. Initial data synchronization issues caused inconsistencies in analytics results. After investigating the root cause, I modified the database queries and used real-time subscriptions efficiently to maintain data consistency. This process helped me strengthen my backend debugging skills and deepen my understanding of cloud-based database management.

I also encountered challenges related to SEO auditing and website optimization using tools like Screaming Frog and Semrush. Identifying and resolving duplicate meta tags, broken links, and schema markup issues required detailed inspection and testing across multiple pages. Some errors originated from outdated configurations within the CMS, which demanded coordination with content editors and the design team. Through consistent effort and collaboration, I managed to improve the technical SEO health of the site and enhance its overall visibility on search engines.

Additionally, working in a fast-paced environment required strong time management and multitasking abilities. Balancing multiple tasks such as code debugging, UI updates, and performance analysis within tight deadlines was challenging. I learned to prioritize work effectively, maintain detailed documentation, and use project management tools efficiently to stay organized and productive.

Overall, the challenges I faced during the internship were instrumental in improving my technical depth, analytical thinking, and collaboration skills. Each obstacle taught me the importance of systematic problem-solving, version control, testing, and communication within a development team. Overcoming these challenges not only enhanced my confidence as a web developer but also prepared me to handle real-world engineering and deployment challenges in future professional roles.

## CHAPTER 8

### CONCLUSION

In conclusion, my internship at Compliance was a transformative experience that significantly enhanced my technical expertise, problem-solving ability, and professional confidence as a web developer. Working as a GTM Engineer Intern allowed me to bridge the gap between academic knowledge and practical implementation, exposing me to the full lifecycle of website development — from front-end design and API integration to performance optimization and analytics monitoring. The experience provided me with a deeper understanding of how modern web technologies function cohesively to create scalable, fast, and user-focused applications.

Throughout the internship, I faced diverse challenges that pushed me to think critically and adapt quickly. Working with complex frameworks like Next.js and tools such as Supabase, Google Cloud, and Vercel gave me valuable insights into building high-performance, production-grade systems. Optimizing website performance, implementing real-time dashboards, and automating indexing processes taught me the importance of writing efficient code and maintaining architectural clarity. These experiences reinforced the significance of modularity, scalability, and performance optimization in real-world projects.

Beyond technical proficiency, the internship also strengthened my analytical and collaborative skills. I learned to effectively communicate technical details with cross-functional teams, manage version control using GitHub, and maintain transparency throughout the development process. The exposure to AI-assisted tools such as Cursor, GitHub Copilot, and n8n helped me appreciate how automation and AI can accelerate development workflows and enhance productivity. Working with SEO and analytics platforms like Google Analytics, Semrush, and Screaming Frog deepened my understanding of data-driven decision-making and taught me how technical development aligns with measurable business outcomes.

This internship also emphasized the value of soft skills such as adaptability, time management, and continuous learning. Managing multiple responsibilities — from debugging code and designing responsive interfaces to integrating APIs and optimizing load speeds — required strong organization and focus. Every challenge became an opportunity to refine my technical thinking and approach problems strategically. The supportive and innovative environment at Compliance encouraged me to experiment, learn from errors, and continuously improve, helping me evolve into



a more confident and independent developer.

As I reflect on my journey at Compliance, I am deeply grateful for the mentorship, guidance, and exposure I received. The internship has not only strengthened my foundation in modern web technologies but also instilled in me a forward-thinking mindset — one that values precision, scalability, and user-centric design. Moving forward, I am eager to apply the skills and experiences I have gained to new challenges, continue exploring cutting-edge technologies, and contribute meaningfully to the field of web engineering and digital innovation.

## ANNEXURES

### INTRENSHIP OFFER LETTER



Antna Technologies Private Limited

ANTNA: IND/2025

15<sup>th</sup> June 2025

Naresh Kumar M  
Chennai  
India.

**Sub: Internship Offer at Antna (Compliance)**

Dear Naresh,

We are excited to offer you the opportunity to join **Antna Technologies Private Limited (Compliance)** as a **GTM Engineering Intern**. Your internship will have a duration of **six(6) months**, beginning on **June 16, 2025**, and concluding on **December 15, 2025**, with a stipend of **₹15,000** per month.(as per Annexure-I)

Upon successful completion of your internship and based on your performance evaluation, you will transition into a **probationary period of six(6) months** with a **monthly salary of ₹25,000**. After completing **one year from the internship start date**, subject to performance and business requirements, your employment will be converted to a **full-time role** with an **annual CTC of ₹5.5 LPA**.

Your internship and subsequent employment will be governed by the company's policies, and all terms will be subject to performance assessments and business needs. Please confirm your acceptance of this offer by signing and returning a copy of this letter by **15.06.2025**

We are happy to have you on board and look forward to your contributions!

With Best Regards,

For Antna Technologies Pvt. Ltd

Accepted By: Naresh Kumar M

Meiyappan M M  
COO & Co-Founder, Antna

Signature:  
Date: 15.06.2025

P: +91 8778237303  
E: admin@antna.co.in  
W: [www.compliance.io](http://www.compliance.io)

41, Airport Road, Airport,  
Ammayappa Nagar,  
Tiruchirappalli 620007,  
Tamil Nadu.

**Annexure – I**

Naresh Kumar M GTM Engineering Intern, Chennai		
Salary Component (S) (INR)	Per Month	Remarks
Basic	6700	Monthly
HRA	3350	Monthly
Special Allowance	2800	Monthly
Data Allowance	2150	Monthly
<b>Total Stipend</b>	<b>15,000</b>	<b>Monthly</b>
Monthly Stipend = INR15,000 (Rupees Fifteen Thousand Only)		

*\*This is only training/internship compensation after the training/internship period is over Full-time Offer will be updated.*

*\*\*Salary is subject to statutory deduction as applicable*

With Best Regards,

**For Antna Technologies Pvt. Ltd**

**Accepted By: Naresh Kumar M**



**Meiyappan M M**  
COO & Co-Founder, Antna



**Signature:**  
**Date: 15.06.2025**

P: +91 8778237303  
E: [admin@antna.co.in](mailto:admin@antna.co.in)  
W: [www.compliance.io](http://www.compliance.io)

41, Airport Road, Airport,  
Ammayappa Nagar,  
Tiruchirappalli 620007,  
Tamil Nadu.



