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# Chapter 1

## About The Institution

### 1.1 Introduction

- **Founded:** OptM Media Solutions Pvt. Ltd. was established in 2016 and is a growing technology services provider headquartered in Bangalore, Karnataka.
- **Headquarters:** OptM Media Solutions Pvt. Ltd., Bangalore, Karnataka.
- **Core Focus:** Specializes in custom software development, web and mobile application development, cloud-based solutions, and AI/ML-based systems.
- **Mission:** To deliver scalable, secure, and customized digital solutions that enhance business productivity and support technological innovation.
- **Vision:** To be a leading provider of next-generation digital solutions by leveraging emerging technologies and fostering a collaborative, innovation-driven culture.

### 1.2 Services Offered by the Institution

- **Full-stack Web and Mobile App Development**
- **Cloud-native Software Solutions**
- **Artificial Intelligence & Machine Learning Services**
- **IT Consulting & System Integration**
- **Digital Product Development and Maintenance**

#### 1. Web Development

- **CMS Development:** Dynamic and user-friendly websites.
- **E-Commerce Solutions:** Online stores with secure payment gateways.
- **Custom Web Applications:** Robust apps tailored to business needs.
- **Full-Stack Development:** Using MERN stack.

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## 2. Mobile Application Development

- **Android Applications:** Native apps for Android devices.
- **Windows Applications:** Custom solutions for Windows.
- **App Store Optimization:** Enhancing app visibility and performance.

## 3. Professional Website Services

- **Website Re-Design and Maintenance**
- **Forum and E-Commerce Development**
- **Responsive Design Enhancements**

## 4. Promotion Services

- **SEO and SMO:** Enhancing digital presence.
- **E-Marketing:** Lead generation and brand visibility.

## 1.3 Contact Details

**Address:** OptM Media Solutions Pvt. Ltd., Bangalore, Karnataka.

**Phone:** +91 7349350390

**Website:** <https://www.optmsol.com>

**Email:** [info@optmsol.com](mailto:info@optmsol.com)

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## Chapter 2

### About The Department

#### 2.1 Introduction

The AI/ML department at OptM Media Solutions Pvt. Ltd. focuses on developing scalable AI solutions for both cloud and edge devices. They specialize in AI at the edge, AI in the cloud, solution engineering, and use case discovery. The team also supports hosting and maintenance, feasibility studies, and provides solution accelerators to speed up development and deployment.

Their goal is to deliver high-quality, customized AI solutions that enhance business productivity and innovation. By leveraging advanced AI/ML technologies, OptM aims to drive technological advancements and provide top-notch services to its clients.

#### 2.2 Roles and Responsibilities

The AI/ML department at OptM Media Solutions Pvt. Ltd. includes the following roles:

2.2.1 AI/ML Engineer: Develops and implements machine learning models and algorithms.

2.2.2 Data Scientist: Analyses complex data sets to extract actionable insights and build predictive models.

2.2.3 AI Researcher: Conducts research on advanced AI techniques and technologies.

2.2.4 AI Product Manager: Manages AI projects and ensures alignment with business goals.

2.2.5 AI Software Developer: Integrates AI models into applications and systems.

2.2.6 AI Solutions Architect: Designs scalable AI solutions and oversees their implementation.

2.2.7 Data Engineer: Manages and optimizes data pipelines and databases to support AI/ML models

2.2.8 Cloud Engineer: Ensures secure and efficient cloud infrastructure for AI/ML applications

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## **Chapter 3**

### **Tasks Performed**

#### **3.1 Weekly Report – OptM Media Solution Private Limited.**

##### **3.1.1 Week 1: Foundation Setup and DevOps Tools**

The first week focused on setting up the foundational tools and understanding DevOps practices. We learned version control using Git and GitHub, which is essential for collaborative workflows. Additionally, we set up CI/CD pipelines using Jenkins and GitHub Actions to automate code testing and deployment. This week provided a solid understanding of collaborative workflows in real-world environments.

##### **3.1.2 Week 2: Legal Chatbot Research & LLM Selection**

During the second week, we conducted research on chatbot architecture and technologies suitable for legal applications. We explored various large language models (LLMs) and selected Legal LLaMA, a domain-specific model from Hugging Face, as the backbone for the chatbot. We studied the Hugging Face Transformers library to enable chatbot responses using the chosen LLM.

##### **3.1.3 Week 3: Dataset Collection and Model Integration**

In the third week, we focused on dataset collection and model integration. We scraped legal content from multiple sources using BeautifulSoup in Python and compiled two datasets: IPC (Indian Penal Code) sections and civil case law summaries. After preprocessing the data, we integrated Legal LLaMA via Hugging Face Transformers, enabling query input and contextual response output from the model.

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### **3.1.4 Week 4: Frontend Development and Feature Integration**

The fourth week was dedicated to frontend development and feature integration. We developed a responsive user interface using React.js, building components such as the landing page, header and footer, and login and signup pages. We integrated OAuth authentication and user management with Firebase. Finally, we connected the React frontend with the backend to deliver a seamless chatbot experience.

## **3.1 Weekly Report – Cognizant Technology Solutions.**

### **3.1.1 Week 1: Foundation Setup and DevOps Tools**

The first week focused on setting up the foundational tools and understanding DevOps practices. We learned version control using Git and GitHub, which is essential for collaborative workflows. Additionally, we set up CI/CD pipelines using Jenkins and GitHub Actions to automate code testing and deployment. This week provided a solid understanding of collaborative workflows in real-world environments.

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## 3.3 Project Work

### **Project Title: Legal AI Chatbot**

**Project Description:** Legal AI Chatbot is a full-stack web application developed using the MERN stack (MongoDB, Express.js, React.js, Node.js), designed to assist users with legal inquiries. The goal of the Legal AI Chatbot is to create a secure, user-friendly platform where individuals can easily obtain legal information and guidance using advanced AI technologies.

### **Key Features:**

1. User Authentication and Authorization
  - Secure login and registration using OAuth-based authentication
  - Role-based access control for users and administrators
2. Legal Query Handling
  - Users can input legal queries and receive responses based on the Legal LLaMA model
  - Contextual responses tailored to specific legal topics
3. Responsive User Interface
  - Built using React.js and Material UI, ensuring a clean, intuitive experience across devices
  - Responsive layouts using Flexbox, Grid, and media queries for mobile compatibility
4. Interactive Components
  - Dynamic chat interface, modal pop-ups for detailed legal information, and toast notifications for actions

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- Form validations and feedback messages implemented using React state and effects

#### 5. Database and Backend Logic

- MongoDB used for storing user queries, profiles, and response history
- Express.js and Node.js used to create RESTful APIs for managing CRUD operations and routing
- Modular API architecture and environment variable configuration for scalability and security

#### **Technology Stack Used:**

- Frontend: React.js, React Router, Material UI, Figma (for UI design)
- Backend: Node.js, Express.js
- Database: MongoDB, Mongoose
- Authentication: OAuth, Firebase
- Development Tools: VS Code, GitHub, Postman, Figma

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## Chapter 4

### Reflection Notes

#### 4.1 Experience

By the end of the internship, I had evolved from a beginner to a confident full-stack developer. I successfully developed and deployed a feature-rich Legal AI Chatbot using the MERN stack, enhancing my portfolio and technical capabilities. The structured mentorship and real-world exposure at OptM Media Solutions Pvt. Ltd. have prepared me for future roles in software development and helped lay a strong foundation for my career.

#### 4.2 Technical Outcomes

During the internship, I gained substantial hands-on experience in AI/ML technologies and the MERN stack—comprising MongoDB, Express.js, React.js, and Node.js. Through structured learning, project-based implementation, and mentorship, I achieved the following technical milestones:

- **AI/ML Proficiency:** Developed and integrated machine learning models using the Legal LLaMA model from Hugging Face. Gained expertise in preprocessing data, training models, and deploying them for real-time use.
- **Front-End Development:** Built dynamic user interfaces using React.js with component-based architecture, hooks, and responsive layouts via Material UI. Developed a responsive chat interface for the Legal AI Chatbot.

#### 4.3 Non-Technical Outcomes

##### Soft Skills and Professional Growth:

- Collaborated effectively with teammates through regular meetings and feedback sessions.



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- Understood Agile workflows including sprint planning and daily standups.
  - Managed time efficiently while balancing project tasks with learning new technologies.
  - Wrote technical documentation such as README files, API references, and deployment instructions.

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## REFERENCES

- [1] F5. “AI / ML Reference Architecture Overview.” Accessed: May 2025. [Online]. Available: <https://www.f5.com/content/dam/f5/corp/global/pdf/reference-guide/f5-ai-reference-architecture.pdf>.
- [2] MinIO. “Architect’s Guide to a Reference Architecture for an AI/ML Datalake.” Accessed: May 2025. [Online]. Available: <https://blog.min.io/architects-guide-to-a-reference-architecture-for-an-ai-ml-datalake/>.
- [3] The New Stack. “Architect’s Guide to a Reference Architecture for an AI/ML Data Lake.” Accessed: May 2025. [Online]. Available: <https://thenewstack.io/architects-guide-to-a-reference-architecture-for-an-ai-ml-data-lake/>.