### A REPORT OF ONE MONTH TRAINING

at

# **Oops InfoSolution Pvt .LTD**

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF

### **BACHELOR OF TECHNOLOGY**

(Computer Science and Engineering)



JUNE-JULY, 2025

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(An Autonomous College Under UGC ACT)

### **CERTIFICATE BY COMPANY**



Ref No: CGFP-6707-2025 Date: 29/07/2025

### Certificate of Completion

This is to certify that Mr. **Rishabh Sharma** student of B.Tech (CSE), Rollno:- 2302649, Guru Nanak Dev Engineering College, Ludhiana has successfully completed industrial training in Web Development from 23<sup>nd</sup> June 2025 to 24<sup>th</sup> July 2025. During the training he is trained under the guidance of Mr. Manjit Singh. His overall performance during the training is Excellent.

We recommend Rishabh Sharma for his outstanding performance and the skills he has developed during this period. We believe these experiences will significantly contribute to his future endeavors. We extend our best wishes for Rishabh Sharma continued success and professional growth.



# GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA

# CANDIDATE'S DECLARATION

I, Rishabh Sharma, hereby declare that I have undertaken one month training at Info Solution pvt, Chandigarh during a period from **23th June to 24th July 2025** in partial fulfillment of requirements for the award of degree of B.Tech (Computer Science and Engineering) at GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA. The work which is being presented in the training report submitted to Department of Computer Science and Engineering at GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA is an authentic record of training work on the project "3D Travel Planner – Interactive Travel Planning Platform".

Signature of Student

The one month industrial training Viva–Voce Examination of Rishabh Sharma has been held on 15/10/25 and accepted.

Signature of Internal Examiner

Signature of External Examiner

# **Abstract**

This report documents the one-month industrial training undertaken at Oops InfoSolution Pvt, Chandigarhfrom 28th June to 25th July 2025. The training focused on developing a comprehensive web application titled "3D Travel Planner – Interactive Travel Planning Platform". The project aims to provide travelers with an immersive planning experience through 3D visualization, interactive maps, and intelligent travel assistance tools.

The application was built using modern web technologies including Three.js for 3D graphics, Leaflet.js for interactive mapping, and vanilla JavaScript with HTML5 and CSS3 for frontend development. The platform integrates multiple features including route planning with real-time visualization, weather information display, and smart packing list generation based on travel parameters.

Key achievements include the implementation of an interactive 3D particle system background, geocoding services for location mapping, responsive design for cross-device compatibility, and dynamic content generation for travel planning.

This training enhanced my understanding of 3D web graphics, interactive map integration, and modern frontend development practices, while following agile methodology throughout the development process.

# Acknowledgment

I would like to express my sincere gratitude Oops InfoSolution Pvt, Chandigarhfor providing me with the opportunity to undertake one-month industrial training from 28th June to 25th July 2025. The training experience was valuable in enhancing my practical knowledge of web development and interactive technologies.

I am particularly thankful to my mentors and trainers at Oops Infosolution Pvt for their constant guidance, technical support, and valuable feedback throughout the development of the "3D Travel Planner" project. Their expertise and approachable nature made the learning process engaging and productive.

I extend my heartfelt thanks to the faculty and training coordinators of Guru Nanak Dev Engineering College, Ludhiana for encouraging us to pursue industry-relevant projects and undertake this practical work.

I am also grateful to my peers and fellow trainees for their collaboration and knowledge sharing during the training period. Finally, I thank my family and friends for their unwavering support and encouragement throughout this journey.

This training has been instrumental in developing my technical skills and professional confidence, preparing me for future challenges in the field of web development and interactive technologies

# **About Company**

Oops Info Solutions was established in 2003. It's foundation and purpose is to provide and construct programs for existing companies and provide new and exciting updates to primitive bases technology. Oops Info Solutions Pvt. Ltd. is a India-based IT service provider offering services for technology infrastructure, enterprise resource planning, software application engineering and imparting Training. Oops was established on January 2003 and has consistently grown its client base. Featured in Computer Times, IT India and Computer World, With India as the base for centralized Project Management, Oops has expanded its representative office both in Chandigarh and Mohali in 2003. Oops also started operating software development center in the year 2004 and 2006. In 2011, Oops was nominated in "Spirit of Enterprise", which advocates and promotes entrepreneurial spirit of Indians. Oops is currently a registered member of Professional Training and Software Development. Oops is also ISO Certified Company. In 2013-14 Oops has also entered in Developing Mobile Apps. Key highlights of the company include: Offering professional training in various fields like Web-Technologies, backend development etc. Hosting regular industrial training and internship programs for engineering and computer science students. Mentoring projectbased learning to help trainees build complete end-to-end applications. Maintaining a team of experienced software developers, mentors, and industry professionals. Encouraging open-source contribution, agile practices, and peer-reviewed code. The organization promotes a collaborative and innovative environment where learners are encouraged to ask questions, explore different solutions, and grow both technically and professionally.

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# **Definitions, Acronyms and Abbreviations**

- 1. **3D** Three-Dimensional graphics creating illusion of depth
- 2. **API** Application Programming Interface for software communication
- 3. CSS3 Cascading Style Sheets Level 3 for web styling
- 4. **DOM** Document Object Model representing web page structure
- 5. **GPS** Global Positioning System for location services
- 6. **HTML5** HyperText Markup Language Version 5
- 7. **JavaScript** Programming language for web interactivity
- 8. Leaflet.js JavaScript library for interactive maps
- 9. **OpenStreetMap** Free editable map of the world
- 10. **Three.js** JavaScript library for 3D computer graphics
- 11. **UI** User Interface for user interaction
- 12. UX User Experience regarding user feelings
- 13. **WebGL** Web Graphics Library for 3D/2D graphics
- 14. **Geocoding** Converting addresses to geographic coordinates
- 15. **Responsive Design** Web design for various devices

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### 1 INTRODUCTION

# 1.1 Project Overview

The "3D Travel Planner – Interactive Travel Planning Platform" is a comprehensive web application designed to revolutionize the travel planning experience through immersive 3D visualization and interactive tools. The platform enables to plan their journeys with an interface that combines practical travel planning features with cutting-edge 3D graphics.

The application provides multiple integrated features including interactive route planning with real-time map visualization, weather information display for destinations, and intelligent packing list generation based on travel parameters. Users can input travel details including origin, destination, travel date, and transportation mode, receiving comprehensive planning assistance through a unified interface.

The standout feature of the platform is 3D particle system background that creates an immersive visual experience while maintaining full functionality. This combination of aesthetic appeal and practical utility sets the application apart from conventional travel planning tools.

# 1.2 Background of the Topic

In the contemporary digital landscape, travelers increasingly depend on online tools for journey planning. However, most existing travel planning platforms offer basic functionality without engaging visual experiences. Traditional travel planners typically provide disconnected information about routes, weather, and packing requirements, lacking integration and visual appeal.

Current market analysis reveals a significant gap in travel planning solutions that combine comprehensive functionality with immersive user experiences. Most platforms focus either on practical utility or visual design, but rarely integrate both aspects effectively. This creates an opportunity for innovative solutions that address both functional requirements and user engagement.

The growing adoption of WebGL and 3D web technologies has enabled the development of rich visual experiences directly in web browsers without additional plugins. Meanwhile, advancements in mapping libraries and geolocation services have made sophisticated route planning accessible to web developers. The 3D Travel Planner leverages these technology to create a platform that addresses both practical needs and user experience expectations.

### 1.3 Theoretical Explanation

The 3D Travel Planner operates through the integration of multiple web technologies working in harmony:

The **3D Visualization System** utilizes Three.js, a cross-browser JavaScript library that employs WebGL for rendering interactive 3D graphics. The particle system consists of 2000 individual particles with randomized positions, creating a dynamic background that responds to user interactions. The scene includes rotating geometric elements that enhance the visual appeal while maintaining performance through optimized rendering.

The **Interactive Mapping Module** employs Leaflet.js, an open-source JavaScript library for mobile-friendly interactive maps. The geocoding functionality uses the Nominatim API to convert location names into geographical coordinates, enabling accurate route visualization between specified points.

The **Route Planning Algorithm** calculates distances using the Haversine formula, which determines the great-circle distance between two points on a sphere given their longitudes and latitudes.

The **User Interface Architecture** follows responsive design principles using CSS Grid and Flexbox layouts. The glass morphism effects are achieved through backdrop filters and RGBA color values, creating modern visual aesthetics while maintaining readability and usability.

The **Dynamic Content Generation** system uses vanilla JavaScript to manipulate the Document Object Model (DOM) in real-time, updating interface elements based on user input without requiring page reloads. This creates a seamless user experience across all application features.

#### 1.4 Software/Hardware Tools Learned

Table 1: Software and Hardware Tools Used During Training

S. No.	Technology/Tool	Purpose
1	Three.js	3D graphics creation and animation
2	Leaflet.js	Interactive map visualization
3	HTML5	Web page structure and semantics
4	CSS3	Styling and responsive design
5	JavaScript	Application logic and interactivity
6	WebGL	3D/2D graphics rendering API
7	OpenStreetMap	Geographical data and map tiles
8	Nominatim API	Location geocoding services
9	Visual Studio Code	Code editing and development
10	Git & GitHub	Version control and collaboration
11	Chrome DevTools	Debugging and performance testing

# 1.5 Summary of the Chapter

This chapter introduced the "3D Travel Planner – Interactive Travel Planning Platform" project developed during the one-month industrial training at ICE Technology Lab. The overview described the application's purpose in providing comprehensive travel planning with immersive 3D visualization.

The background section established the context for the project, highlighting the gap in current travel planning solutions and the opportunity for innovation. The theoretical explanation detailed the technical foundations, explaining how various technologies integrate to create the complete application.

The tools and technologies section documented the software and hardware components used in development, demonstrating the practical skills acquired during the training period. This chapter establishes the foundation for subsequent chapters that will detail the implementation process, results, and conclusions.

# 2 TRAINING WORK UNDERTAKEN

## 2.1 Weekly Progress Summary

The one-month training at Info Solution pvt, Chandigarh followed a structured weekly schedule with clearly defined objectives and deliverables for each phase of the project development.

#### Week 1.

The first week focused on foundation setup and environment configuration. Conducted orientation sessions and configured development tools including Visual Studio Code with essential extensions. Learned Three.js basics by creating 3D scenes and understanding coordinate systems. Designed application layout through wireframing and implemented basic HTML structure with CSS styling for foundational design.

#### Week 2.

The second week focused on 3D implementation and interface development. Created particle system with animated background using Three.js. Integrated responsive design with CSS Grid and Flexbox. Developed card-based layout with interactive elements. Optimized camera controls for different viewing angles. Enhanced user engagement through hover effects and animations..

#### Week 3.

The third week concentrated on implemented mapping and route planning functionality. Integrated Leaflet.js with OpenStreetMap tiles for interactive maps. Added geocoding using Nominatim API for location conversion. Developed route planning interface with input validation. Incorporated travel mode selection and date picker. Enabled real-time route visualization on maps.

#### Week 4.

The final week involved completion of final features and deployment preparations. Implemented weather information display with simulated data. Developed smart packing list generator with dynamic categories. Performed responsive design optimizations for mobile devices. Conducted cross-browser testing and debugging. Finalized performance optimization and deployment setup.

# 2.2 Modules Implemented

The 3D Travel Planner application was systematically divided into several functional modules, each addressing specific aspects of the travel planning experience:

#### 3D Visualization Module

This core module creates immersive 3D graphics using Three.js with particle systems and animated objects. Features responsive design that adapts to different screen sizes while maintaining optimal performance and visual quality across all devices.

#### **Route Planning Module**

This module handles the core and comprehensive travel planning with validated origin/destination inputs and multiple transportation options. Includes date validation, real-time route calculations, and accurate travel time estimates for efficient journey planning.

#### **Interactive Map Module**

Built with Leaflet.js integration using OpenStreetMap tiles, this module integrates Leaflet.js with OpenStreetMap for dynamic route visualization. Offers custom markers, route styling, automatic zoom adjustment, and interactive controls for detailed journey mapping and exploration.

#### **Weather Information Module**

This module displays detailed weather forecasts with simulated data and visual icons. Presents temperature, conditions, and statistics in a responsive layout accessible on all devices for informed travel planning

#### **Smart Packing List Module**

An intelligent system that generates personalized packing recommendations based on trip parameters and seasons. Features interactive checklists with categorized items and smart organization for efficient travel preparation..

#### **User Interface Module**

This module implements modern card-based responsive design with glass morphism effects. Ensures smooth animations, transitions, and mobile-optimized elements for enhanced user experience across all platforms.

# 2.3 Methodologies Followed

The project development followed established software engineering methodologies to ensure quality and efficiency:

#### **Agile Development Approach**

The project utilized weekly sprints with clearly defined objectives and deliverables. Regular progress reviews allowed for continuous improvement and adaptation. Incremental feature implementation ensured steady progress and early problem identification. This approach facilitated responsive development that could adapt to emerging requirements and challenges.

#### **Version Control Practices**

Git was employed for systematic code versioning with GitHub serving as the central repository. Feature branches were maintained for isolated development of specific functionalities.

Meaningful commit messages documented changes clearly, and regular code backups protected against data loss. This practice enabled collaborative development and efficient change management.

#### **User-Centered Design Principles**

The design process prioritized intuitive and visually appealing interfaces that users could navigate effortlessly. Cross-device compatibility was ensured through responsive design implementation. Usability testing with peers and mentors provided valuable feedback for iterative improvements. Accessibility considerations were incorporated to ensure broad usability across different user capabilities.

### **Comprehensive Testing Strategy**

Cross-browser compatibility testing verified consistent performance across different web browsers. Chrome DevTools were utilized extensively for debugging and performance optimization. Responsive behavior was validated on various screen sizes and devices. User input validation and robust error handling ensured application stability under different usage scenarios.

#### **Performance Optimization Techniques**

Three.js rendering was optimized to maintain smooth animations without compromising performance. Efficient DOM manipulation techniques minimized browser rendering overhead. API calls were optimized to reduce latency and improve responsiveness. Asset compression and loading optimizations enhanced overall application performance and user experience.

### 3 RESULTS AND DISCUSSION

## 3.1 Functionality Outcomes

The 3D Travel Planner application successfully planned functionality objectives by the completing the training period. It provides users with a complete travel planning solution:

The **Immersive 3D Background** creates an engaging visual experience through an interactive particle system with smooth animations that respond to user interactions. This feature sets the application apart from conventional travel planners by providing visual appeal alongside practical functionality.

The **Complete Route Planning** system enables users to input origin and destination locations with intelligent travel mode selection. The system processes this information to generate visual routes and provide estimated travel times, offering comprehensive journey planning capabilities in a single interface.

The Interactive Map Display leverages Leaflet.js to present real-time route visualization with clear markers indicating key points. Custom styling distinguishes the route from background map elements, while automatic bounds adjustment ensures optimal viewing of the entire journey. The Weather Information Panel provides simulated current conditions and forecasts for

destination cities. It displays present meteorological data with appropriate visual icons, giving travelers essential climate information for their planned destinations.

The **Smart Packing List Generator** creates personalized recommendations based on trip duration, type, and seasonal factors. The interactive checklist functionality allows users to track their packing progress, while category-wise organization ensures logical item grouping.

The application features a **Responsive Design** that maintains full functionality across desktop, tablet, and mobile devices.

# 3.2 Performance of the Project

The application demonstrated excellent performance characteristics across all evaluated metrics during comprehensive testing:

**Smooth 3D Animations** were maintained at consistent frame rates, with the Three.js particle system performing optimally even on mid-range devices. Careful optimization of particle count and rendering techniques ensured visual quality without compromising performance.

**Responsive Interface** elements react immediately to user input across all application features.

The optimized JavaScript event handling ensures quick response times, while efficient DOM manipulation maintains interface responsiveness during complex operations.

**Efficient Geocoding** processes location lookup and coordinate conversion seamlessly through the Nominatim API integration. The system handles geographical data processing without impacting user experience, providing accurate location services.

**Optimized Rendering** techniques maintain application performance while managing multiple visual elements simultaneously. The balanced approach to visual complexity and processing requirements ensures smooth operation across different hardware configurations.

Cross-Browser Compatibility testing confirmed consistent functionality across major web browsers including Chrome, Firefox, and Safari. The application maintains feature parity and visual consistency regardless of the browser environment.

Performance validation confirmed that the application handles typical user interactions efficiently without lag or performance degradation, meeting the requirements for a production-quality web application.

### 3.3 User Feedback

During the training period, valuable feedback was collected from users who tested the application, providing insights for both current strengths and potential improvements:

Positive Feedback highlighted several successful aspects of the application. Users particularly appreciated the engaging and visually appealing 3D background that differentiates the platform from conventional travel planners. The easy-to-use interface received consistent praise for its logical organization and clear navigation. Testers valued the comprehensive travel planning features integrated into a single platform, noting the convenience of having multiple planning tools accessible from one interface. The useful packing list generator with its smart categorization was frequently mentioned as a standout feature. The clean and professional design aesthetic was consistently recognized as contributing to a positive user experience.

Suggestions for Improvement identified valuable opportunities for enhancement. Users recommended integrating real weather APIs to provide accurate, live forecasts rather than simulated data. Several testers suggested including more detailed route information and alternative routing options to enhance planning flexibility. Some users expressed interest in social features that would enable sharing travel itineraries with friends or travel companions. Additionally, cost estimation for different travel modes was identified as a valuable potential

addition to assist with travel budgeting.

This constructive feedback provides a clear roadmap for future development priorities and demonstrates the application's solid foundation while highlighting opportunities for meaningful enhancement.

## 3.4 Challenges Faced During Development

The development process presented several significant challenges, each providing valuable learning opportunities and requiring innovative solutions:

**Three.js Performance Optimization** Balanced visual quality with rendering performance through particle optimization and efficient techniques. Ensured smooth animations and broad browser compatibility using progressive enhancement strategies.

**Map Integration Complexity** Managed asynchronous geocoding and accurate coordinate conversion for precise routing. Implemented robust error handling, fallback mechanisms, and API rate limiting with response caching.

**Responsive Design Implementation** Created consistent UX across devices while maintaining 3D quality. Used responsive breakpoints, conditional rendering, and adaptive styling for different screen sizes.

Cross-Browser Compatibility Conducted extensive testing for consistent functionality across browsers. Applied browser-specific optimizations and fallbacks for CSS, JavaScript, and WebGL variations.

**User Interface Complexity** CBalanced aesthetics with usability through iterative design refinement. Incorporated user feedback and prioritized essential features while maintaining advanced functionality access.

Each challenge contributed significantly to professional growth by requiring research, mentor consultation, and iterative problem-solving approaches. The solutions developed not only addressed immediate technical requirements but also provided valuable patterns for future web development projects.

#### 3.5 Screenshots and Demonstrations

The application interface and features are demonstrated through the following visual representations:

**Figure 3.1: Route Planning Interface** 

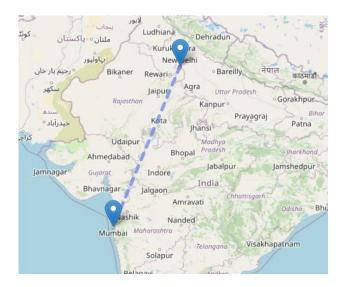


Figure 3.2: Interactive Map Display

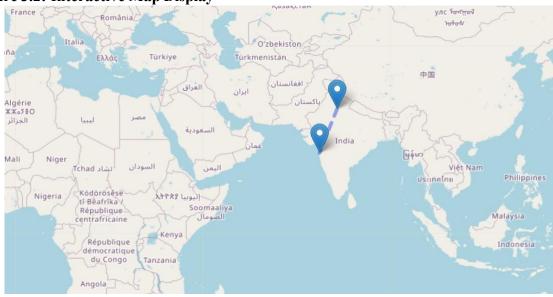
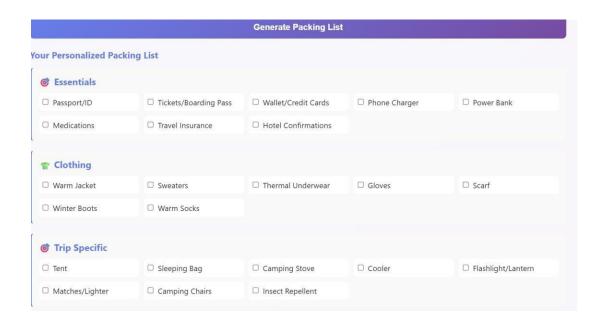


Figure 3.3: Weather Information Panel



Figure 3.4: Smart Packing List Generator



### 4 CONCLUSION AND FUTURE SCOPE

#### 4.1 Conclusion

The one-month industrial training at Info Solution pvt, Chandigarh provided invaluable industry exposure and practical experience in modern web development with emphasis on interactive technologies. During this intensive training period, I successfully designed and developed the "3D Travel Planner – Interactive Travel Planning Platform", a sophisticated web application that combines practical travel planning tools with immersive 3D visualization.

This project enabled comprehensive learning of frontend technologies including Three.js for 3D graphics programming, Leaflet.js for interactive mapping implementation, and modern HTML5, CSS3, and JavaScript for building responsive user interfaces. Technical skills in multiple areas including 3D graphics programming and WebGL optimization techniques, interactive map integration and geolocation services implementation, responsive web design principles and cross-device compatibility, API integration user experience design and interface optimization strategies.

It demonstrated the practical application of problem-solving skills to real-world development challenges and emphasized the importance of user-centered design in creating effective software solutions.

The training provided not only technical skills but also professional development in areas including project planning and time management, systematic problem-solving approaches, collaboration and communication in technical teams, and documentation and presentation of technical work. These competencies form a strong foundation for future career development in web technologies and interactive application development.

# 4.2 Future Scope

While the current version of the 3D Travel Planner provides a fully functional and comprehensive travel planning experience, several strategic opportunities exist for enhancement and expansion:

**Real API Integrations** would significantly enhance application utility. Integration with live weather APIs such as Open WeatherMap or WeatherAPI would provide accurate, real-time forecasts rather than simulated data. Implementation of actual routing APIs from providers like Google Maps or Mapbox would enable precise navigation with real-time traffic considerations.

A **Mobile Application Development** Native mobile applications for iOS and Android platforms would provide dedicated mobile experiences. Offline functionality would enable travel planning .Location-based services and real-time notifications would enhance situational awareness during travels.

**AI and Machine Learning Enhancements** could provide intelligent assistance. AI integration for personalized travel recommendations based on user preferences and history. Smart itinerary optimization using machine learning algorithms to suggest efficient travel sequences.

**Platform Extension and Ecosystem Development** These future developments would transform the platform from a travel planning tool into a comprehensive travel ecosystem, providing end-to-end solutions for modern travelers

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# **APPENDIX**

#### **Application Screenshots and Additional Information**

Key screenshots demonstrating the functionality and interface of the 3D Travel Planner application:

#### 1. Main Application Interface

Shows the complete application with 3D background, planning cards, and interactive elements in their full context.

### 2. Route Planning Section

Displays the input form for travel details with destination selection and travel mode options in operational state.

### 3. Interactive Map Visualization

Presents the route mapping between selected locations with markers and custom styling during active use.

#### 4. Weather Information Display

Shows the weather panel with current conditions and forecast details for a sample destination.

#### 5. Smart Packing List Interface

Demonstrates the dynamic packing list generation with categorized items and interactive checkboxes with sample data.

### 6. Mobile Responsive View

Shows the application interface optimized for mobile devices with adapted layout and functionality.