Software Requirements Specifications

<VIRTUAL DEPARTMENT TOUR>

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Definition of Terms, Acronyms and Abbreviations

RS	Requirements Specifications, outlining the functional and non-functional needs of the website.
3D Vista	Software used to create the 3D virtual tour of the department.
VR	Virtual Reality, the immersive technology used for the virtual tour experience.
UI/UX	User Interface and User Experience, ensuring the website is user-friendly and visually appealing.
HTML	Hyper Text Markup Language, the standard language for building web pages.
CSS	Cascading Style Sheets, used for styling the website.
JS	JavaScript, scripting language to make the website interactive.

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1. Introduction

Virtual tour websites serve as a powerful tool to bridge the gap between physical spaces and remote audiences. The Department of Computer Science, recognized for its innovation and academic excellence, offers an ideal context for such a project. By enabling students, faculty, and visitors to virtually explore departmental facilities, the proposed platform aims to enhance accessibility and engagement. Employing advanced techniques, this project will depict key spaces such as laboratories and collaborative areas with high visual fidelity. Through a combination of interactive virtual visualizations, intuitive web design, and reliable hosting solutions, the platform aspires to reach a global audience, foster engagement, and effectively showcase the department's resources.

1.1 Purpose of Document

This document serves as a comprehensive specification of system requirements for the development of an interactive Virtual Tour of the Department of Computer Science. It outlines the technical and functional requirements essential for the system's development, operation, and maintenance, along with the environmental constraints and limitations under which it will function. The primary audience for this document includes project stakeholders, such as department administrators, developers, designers, and other team members involved in the creation and implementation of the system. Faculty members such as students, staff, and external visitors will also benefit from the insights and details provided herein. This document aims to guide the development process and ensure alignment with the expectations and requirements of all relevant stakeholders

1.2 Project Overview

We are developing a web-based virtual tour of the Computer Science Department using the 3D Vista platform. This project aims to provide prospective students, faculty, and visitors with an immersive experience, allowing them to explore departmental spaces remotely. The virtual tour will feature interactive virtual tour of classrooms, computer labs and other key areas, enhanced with informational hotspots. Our goal is to create an engaging and informative platform that offers users a comprehensive understanding of the department, helping them connect with the environment before an in-person visit.

1.3 Scope

In-Scope Features:

- Develop a virtual tour of the Computer Science Department using 3D Vista.
- Enable interactive navigation and multimedia hotspots.
- Ensure responsive web design for cross-device compatibility.
- Host 3D assets on online storage for reliable access.

Out-of-Scope Features:

- Real-time guided tours or live interactions.
- Augmented reality (AR) or AI-driven chatbots.
- Multi-department or campus-wide integration.
- E-commerce or payment functionalities.

2. Overall System Description

2.1 User characteristics

- The system caters to individuals seeking detailed information about the department, its facilities, and offerings.
- Current students can use the virtual tour to explore new resources or revisit familiar areas within the department.
- Department staff utilize the system to provide updates, assist students, and manage administrative tasks.
- External visitors can remotely access the platform to gain insights into the department.
- Key responsibilities include maintaining up-to-date information and managing multimedia content and the virtual tour effectively.

2.2 Operating environment

- The system is accessible on standard devices, including desktop computers, laptops, and smartphones with internet connectivity.
- It is compatible with widely used operating systems such as Windows, macOS, and Linux, and functions seamlessly on major web browsers, including Chrome, Firefox, Safari, and Edge.
- The virtual tour are created and operated using the 3D Vista platform.

2.3 System constraints

- Software Limitations:
  The functionality of the virtual tour will be largely dependent on the capabilities of the 3D Vista software in terms of creating and displaying the virtual environment. There may be constraints regarding the level of interactivity and customization that the software can provide.
- Hardware Requirements:
  Users must have devices that are capable of running modern web browsers. Those wishing to experience the virtual tour in virtual reality will require compatible VR headsets to fully engage with the immersive experience.
- Legal Requirements:
  The system must adhere to relevant legal regulations and institutional policies, particularly those relating to the protection of user data and compliance with accessibility standards.
- Environmental Adaptations:
  The system is designed to perform optimally in various environments, ensuring seamless use for online access in diverse settings, such as schools and home environments.
- User Considerations:
  The system will be designed with a diverse user base in mind, including prospective students, current students, and staff. It will prioritize user-friendly features that ensure ease of navigation and clear, high-quality visuals.

3. External Interface Requirements

3.1 Hardware Interfaces

- The system will be compatible with desktop computers, laptops, and smartphones.
- Basic input devices, such as a keyboard, mouse, or touchscreen, will be required to interact with the 3D Vista software and multimedia features.

3.2 Software Interfaces

- The system will connect to web servers to host the virtual tour on a secure and reliable server setup.
- The software must function smoothly across various web browsers and operating systems.
- A backend storage solution, will be used to store user interaction data, tour progress, and multimedia content.

4. Functional Requirements

- The virtual layout allows users to navigate various rooms, floors, and buildings within the department.
- Clicking on information hotspots provides access to details such as text, images, or videos related to specific areas.
- The tour is designed to be mobile-friendly, adjusting to different screen sizes.
- An optional individual room tour feature provides a quick experience to assist users in exploring the department.

5. Non-functional Requirements

5.1 Performance Requirements

- The system should be accessible to most users within 5 seconds.
- Devices with at least 4GB of RAM and a 2 GHz processor will be able to run the interactive virtual environment smoothly.
- The system must support at least 500 simultaneous users without performance issues.

5.2 Safety Requirements

- Ensure that all images and videos comply with copyright regulations.
- Provide a secure, encrypted link to protect data from being intercepted.
- Implement data backups to safeguard against any loss of system information**.**

6. Assumptions and Dependencies

Assumptions:

- The software will use built-in or third-party services to detect and filter copyrighted images and videos.
- Secure communication will be ensured using SSL/TLS encryption, assuming compatible browser versions and security standards.
- Regular automated data backups will be implemented, relying on adequate storage infrastructure.
- Secure access control and authentication methods (e.g., OAuth, MFA) will manage user permissions.
- The software will follow global data protection laws (e.g., GDPR, CCPA).

Dependencies:

- It will depend on third-party services (e.g., Content ID) for copyright detection and cloud providers (e.g., AWS, Azure) for backup storage.
- Reliable encryption protocols (e.g., OpenSSL, TLS) will be necessary for secure links.
- Ongoing legal review will ensure adherence to copyright laws.
- Users' devices must support secure encryption standards (e.g., TLS 1.2+).
- Sufficient storage and fast data transfer are needed for timely backups.

7. Appendices

7.1 Appendix A: Glossary of Terms

- A unique tool designed to build virtual tours and interactive virtual spaces.
- Clickable markers in the virtual tour offer extra details or multimedia content.
- The focus is on the look and feel of the User Interface and User Experience, making it easy to use.
- Technology that lets users experience a simulated virtual world.
- A safe method for encrypting data exchanged on the web.

7.2 Appendix B: Tools and Technologies

- 3D vista: The main tool for building and displaying the virtual tour.
- HTML, CSS, JavaScript: The coding languages and resources that help create the website's appearance.
- Storage Drive: The place where all the multimedia files and system information are kept.
- Web Browsers: Chrome, Firefox, Safari, and Edge are used to open the web application.