School of Information and Communication Technology

Griffith University

7821ICT\_P1 – WIL Part 1

Intelligent Restaurant Engagement Platform

Project Proposal

**Team: NexGen Solutions**

Date of Submission: 16th August, 2024

**Industry Partner: Vision Verse Interactive**

**Client: Zita Wong**

**Team members:**

Team member 1 Name:Jay Tuka

Team member 2 Name:Yunjiao Dong

Team member 3 Name:Sina Rahimipour

Team member 4 Name:Pouya Yazdani

Team member 5 Name:Jigme Yeshey

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**Revision History**

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# Introduction

## Project Overview

Project description:

This project, Intelligent Restaurant Engagement Platform, aims to develop an AI-driven platform to enhance customer engagement for restaurants by automatically extracting menu data (food names, prices, images) from various sources. The data will be stored in a database and used to create engaging content and interactive games to attract and retain customers.

Client’s information

Name: Zita Wong

Email: [wonghioloi111@gmail.com](mailto:wonghioloi111@gmail.com)

Organization: Vision Verse Interactive

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## Team Overview

Team members:

Team member 1: Jay Tuka

Role: Team Leader and Client Liaison

Team member 2: Yunjiao Dong

Role: System Tester and Documenter

Team member 3: Sina Rahimipoorsisakht

Role: Business Analyst and Quality Manager

Team member 4: Pouya Yazdani

Role: System Design and Developer

Team member 5: Jigme Yeshey

Role: Developer

## Definitions and Acronyms

|  |  |
| --- | --- |
| Acronym/Tool | Definition |
| AI | Artificial Intelligence: The simulation of human intelligence in machines that are programmed to think and learn. |
| OCR | Optical Character Recognition: A technology that converts different types of documents, such as scanned paper documents, PDFs, or images captured by a digital camera, into editable and searchable data. |
| Web scraping | The process of using bots to extract content and data from a website. |
| PDF | Portable Document Format: A file format developed by Adobe that preserves the formatting of a document and allows it to be shared and viewed consistently across different devices. |
| Database | An organized collection of structured information, or data, typically stored electronically in a computer system. |
| UI | User Interface: The means by which the user and a computer system interact, particularly the use of input devices and software. |

# Project vision

# Product Vision

DineSeal is:

For: restaurant owners and managers

Who: wants to efficiency manage and utilize menu data for enhanced customer engagement in-store and online, as well as mobile devices

The: DineSeal

Is a: data extraction and management system

That: automates the extraction of menu information from various sources, stores it in a structured database, and creates engaging content and interactive games

Unlike: manual data entry systems or simple OCR tools

Our product: seamlessly integrates data extraction, storage, and content generation, significantly improving efficiency and customer engagement.

# Customers and Benefits

Customer problems:

* Manual Menu Management: Restaurant owners often spend a lot of time and effort manually updating and managing menu information across platforms.
* Customer Engagement: Restaurants struggle to find innovative ways to engage customers and keep them coming back.
* Inconsistent data: Inconsistent and outdated menu information can lead to customer dissatisfaction and order errors.
* Lack of Interactive Content: Traditional menus lacked interactive and engaging content that would appeal to tech-savvy customers.

Solutions:

* Automated Data Extraction: Implement AI models to automatically extract menu data from a variety of sources, eliminating the need for manual updates.
* Engaging Content Creation: Utilize extracted data to generate interactive content and games to engage customers.
* Centralized database management: Store all menu data in a structured, easily accessible database to ensure consistency across platforms.
* User-friendly interface: Provides a platform where restaurant owners can easily upload and manage menu information.

Product benefits:

* Time and cost efficiency: Reducing the time and resources spent on manually updating menus allows restaurateurs to focus on other areas of the business.
* Enhanced customer engagement: Interactive games and engaging content created from menu data attract and retain customers.
* Data accuracy and consistency: Ensuring menu information is consistent and up to date across all platforms reduces errors and increases customer satisfaction.
* Increased customer loyalty: Engaging and interactive content encourages repeat visits, which fosters customer loyalty.

Customer/User groups – primary user groups:

* Restaurant owners and managers:
* Age: 30-60 years old
* Education: Varies; typically includes some post-secondary education or professional experience in the restaurant industry.
* Experience: Generally, have several years of experience managing restaurant operations and customer service.
* Restaurant customers:
* Age: 18-45 years old
* Education: High school diploma to college graduates
* Experience: Regular users of restaurant services and familiar with digital platforms.

Benefits to each group:

* Restaurant owners and managers:
* Efficiency: Saves time and effort in managing and updating menus.
* Customer Satisfaction: Consistent and accurate menu information leads to improved customer satisfaction.
* Increased Revenue: Engaging content and interactive games can attract more customers, potentially increasing revenue.
* Restaurant customers:
* Enhanced Experience: Interactive and engaging content makes the dining experience more enjoyable.
* Reliable Information: Access to accurate and up-to-date menu information reduces ordering errors and enhances satisfaction.

Specific customers:

* Small to Medium-Sized Restaurants: These establishments often lack the resources for extensive manual menu management and customer engagement initiatives.
* Restaurant Chains: Chains with multiple locations benefit from centralized management of menu data and consistent customer engagement strategies.
* Digital-First Restaurants: Establishments that prioritize digital engagement and online orders will find the AI-driven platform particularly beneficial for maintaining updated menus and enhancing customer interaction.

# Key Factors to Judge Quality

Quality indicators for the Intelligent Restaurant Engagement Platform:

* Data accuracy and consistency
* Metric: Accuracy rate of extracted menu data (target: 98%+).
* Importance: Ensures reliable and consistent information for customers, reducing order errors and enhancing satisfaction.
* Performance and Speed
* Metric: Time taken to extract and process menu data (target: less than 30 seconds per menu).
* Importance: Fast data extraction enhances user experience and efficiency for restaurant owners.
* User Acceptance and Engagement
* Metric: User satisfaction score from restaurant owners and customers (target: 90%+ positive feedback).
* Importance: High user satisfaction indicates the platform is meeting the needs of both restaurant owners and their customers.
* Reliability and Uptime
* Metric: System uptime (target: 99.9%+).
* Importance: Reliable operation ensures continuous access to the platform, essential for both restaurant owners and customers.
* Financial Impact
* Metric: Increase in customer retention and repeat visits (target: 20%+ increase).
* Importance: Demonstrates the platform's ability to enhance customer engagement and drive revenue growth.
* Ease of Use
* Metric: Average time for restaurant owners to upload and manage menus (target: less than 10 minutes).
* Importance: A user-friendly interface reduces the learning curve and operational burden for restaurant owners.
* Competitive Differentiation
* Metric: Unique features (e.g., interactive games generated from menu data, AI-driven content creation).
* Importance: Differentiates the platform from competitors by offering innovative features that enhance customer engagement and experience.

Competitive differentiation and value proposition:

* Innovative AI Technology: The platform uses advanced AI models for data extraction and content generation, offering a high level of automation and accuracy that competitors may lack.
* Interactive and Engaging Content: Unique feature of generating interactive games and engaging content from menu data to attract and retain customers.
* User-Friendly Interface: Designed with ease of use in mind, allowing restaurant owners to quickly and easily manage their menus without extensive training.
* Centralized Data Management: Ensures consistency and accuracy of menu information across all platforms, reducing the risk of errors and enhancing customer trust.
* Reliability and Performance: High system uptime and fast data processing ensure a smooth and dependable experience for both restaurant owners and customers.
* Proven Financial Impact: Demonstrated ability to increase customer retention and repeat visits, providing a clear financial benefit to restaurant owners.

# Key Features and Technology

Key technology:

Frontend:

* Next.js: Server-side rendering and static site generation for improved performance and SEO.
* React.js: Component-based architecture for building user interfaces.
* Tailwind CSS: Utility-first CSS framework for rapid and efficient UI styling.

Backend:

* Hasura: Auto-generates real-time GraphQL API from PostgreSQL, reducing backend development time.
* GraphQL: For building efficient, scalable API endpoints.
* PostgreSQL: Reliable relational database system with robust features.

API and Data Handling:

* GraphQL: Allows precise data fetching, improving efficiency and performance.
* Apollo Client: Manages local and remote data with GraphQL.

State Management:

* Redux: Predictable state container for consistent state management.

DevOps and CI/CD:

* Docker: Containerizes applications to ensure consistency across environments.
* Azure: Sets up CI/CD pipelines for automated testing and deployment.
* Kubernetes: Manages deployments and scales applications.

Project Management Tools:

* Jira: Task tracking.
* Confluence: Documentation.
* Slack: Communication.

Specific Features:

* Automated Menu Data Extraction: AI models for extracting text and images from various formats.
* Centralized Data Management: Structured database storage for consistent and accessible menu data.
* Content and Game Generation: Creation of engaging content and interactive games from menu data.
* User-Friendly Interface: Easy menu upload and management for restaurant owners.
* System Integration: Seamless integration between data extraction, database, and content/game modules.
* Performance Monitoring and Reporting: Insights into system performance and user engagement.
* Scalability: Supports growth and increased data volumes.
* Security Features: Data protection through encryption and secure access controls.

# Generative AI

The client allows us to use AI when needed.

Privacy Concerns:

* Data Privacy: Implement strict access controls, encryption, and anonymization to protect personal data.
* Data Security: Conduct regular security audits and use secure protocols to prevent data breaches.
* User Consent: Ensure clear privacy policies and explicit consent mechanisms for data use.
* Data Storage and Retention: Define policies for secure data storage and retention, and regularly review practices.

IP Concerns:

* Intellectual Property Rights: Check for content that may infringe on existing IP and use licensed or public domain data.
* Ownership of Generated Content: Define ownership terms for AI-generated content in user agreements.
* AI Training Data: Use legally obtained, licensed, or open-source datasets for training AI models.

To ensuring Responsible and Ethical Use of Generative AI:

* Transparency and Accountability: Communicate AI usage and data handling clearly and publish detailed policies.
* Bias and Fairness: Audit AI models for bias, use diverse training data, and involve interdisciplinary teams.
* Ethical Guidelines: Develop and follow ethical guidelines and establish an ethics committee.
* User Education: Educate users about AI functionalities and limitations through training and resources.
* Regulatory Compliance: Stay updated on laws and regulations and implement compliance checks.
* Security Measures: Use encryption, access controls, and regular security audits to protect data.
* Human Oversight: Ensure critical decisions have human review and mechanisms for intervention

# Other product factors

* Interaction with associated systems/products
* Potential for design growth or modification
* Physical environment it will be used in
* Patent infringement/protection
* Safety and liability
* Quality and reliability
* Ergonomics
* Users' abilities
* Sourcing and assembly – including partnerships, alliances, dual source needs…
* Distribution
* Documentation, training, servicing, and maintenance
* Unusual equipment or facilities needed

# Success criteria for client

* Accurate Data Extraction:

- Priority: High

- Measure: Achieve a 90% or higher accuracy rate in extracting menu data from various formats.

* Engaging Content and Games:
* Priority: High
* Measure: Increase user engagement metrics, such as time spent on games and content, by 20%.
* Robust Database Management:
* Priority: High
* Measure: Efficiently handle a specified number of menu entries with no performance degradation.
* User-Friendly Interface:
* Priority: High
* Measure: User satisfaction scores of 4 out of 5 or higher in usability tests.
* Seamless System Integration:
* Priority: Medium
* Measure: Successful integration testing with no critical issues or downtime.
* Performance Monitoring and Reporting:
* Priority: Medium
* Measure: Achieve 99% uptime and provide clear, actionable user engagement insights.

# requirements

User stories will be used to identify use cases a potential user will encounter.

* **User story One:**
* **As a restaurant owner,** I want to be able to edit and customize the content generated from my social media and food delivery platforms, **so that** I can ensure it aligns with my brand and messaging before publishing it on my Dine Seal web application.
* **Rationale for User Story One:** This allows the restaurant owner to fine-tune automatically generated content, ensuring it meets their standards.
* **User story Two:**
* **As a restaurant owner,** I want to be able to view analytics and reports on how customers are interacting with the games and content on my Dine Seal web application, **so that I** can understand customer behaviour and make informed decisions to improve engagement.
* **Rationale for User Story Two:** Provides insights into the effectiveness of the content and games, enabling data-driven improvements.
* **User story Three:**
* **As a restaurant owner,** I want to be able to set up automatic updates for my menu and content whenever there are changes in my food delivery or social media platforms, **so that** my DineSeal web application is always up to date without requiring manual intervention.
* **Rationale for User Story Three: Ensures the platform stays current with minimal effort from the restaurant owner.**
* **User story Four:**
* **As a customer,** I want to be able to share the game from the DineSeal web app on social media, **so that** I can engage my friends and promote the restaurant.
* **Rationale for User Story Four: Encourages social sharing, which can increase the restaurant's visibility and attract new customers.**
* **User Story Five:**
* **As a customer,** I want to be able to view information about upcoming events and promotions, signature dishes, see what other people are ordering **so that** I can get a better feel for the restaurant and promote the restaurant.
* **Rationale for User Story Five:** Customers want to be included and to view promotions all in one location, using Dineseal customers will understand what the restaurant is about on a personal level and future events or promotions.

## Backlog generated using a Jira Board:

It is expected the backlog will continue to develop over the course of the next sprints when the team is deeper in development.

图形用户界面, 应用程序

描述已自动生成图形用户界面, 文本, 应用程序, 电子邮件

描述已自动生成

# project plan

A Gantt chart was created to identify how this backlog will be completed over the next two months. The Gantt chart stems from the backlog presented in 3.0 requirements. The chart may change over the duration of the project.



# Agreements

All persons identified in this document sign the form below to indicate that they have read the Project Vision and Agreement and agree to the contents therein.



Team member 1 Name



Team member 2 Name



Team member 3 Name



Team member 4 Name



Team member 5 Name 