F24-029-D-VerseCraft

Project Team

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Chapter 1

Introduction

This project proposal document outlines the purpose and development of VerseCraft; a writing workflow management web application. This document will be providing an in-depth overview of the project along with a detailed background of the system.

1.1 Problem Statement

Currently writers face challenges such as creative blocks, disorganised workflows and limited grammar proficiency which often leads to a lack of overall productivity. Writers need a tool that can provide them with some guidance when they lack direction. Writers also have to be contextually aware of a plethora of elements when writing stories, they need a tool that can help them manage their massive workflows. New writers typically struggle with starting stories since the need help grammatically. Our application will aim to provide solutions to all these problems.

1.2 Motivation

Through meticulous market analysis, we identified a gap in the creative writing space: there is no application that provides a complete collaborative end-to-end solution from novel and story creation to publishing specifically designed for both English and Urdu writers.

1.3 Problem Solution

Through our application we will address the issues of creative blocks, disorganised workflows and limited grammar proficiency of writers. To do this our application will provide a comprehensive and complete suite of tools designed specifically to tackle these issues.

Our application will be providing artificial intelligence features that will help guide writers when they lose direction and feel stuck.

For workflow management we will be providing a modifiable structured writing environment that will allow the writers to plan,organise and collaborate on their stories easily. Features such as character development, plot development windows, chapter-wise writing and notes will be essential for writers to keep track of the different elements of their writing project.

The application will also provide grammar-check tools for English language by integrating artificial intelligence to make sure the writing project is understandable and ready to be published.

Objectives:

a) To allow people to create compelling written works without having formal education or perfect grammar by using an AI-assisted platform.

b) To improve writers' productivity and focus to prevent or solve a writer's block.

c) To provide a collaborative platform for writers to work together seamlessly.

e) To provide proper workflow management for a seamless user experience.

1.4 Stake Holders

a) Writers: Users seeking advanced tools for story and character development.

b) Administrators: Personnel managing the platform's operation, security, and user support.

c) Developers and Designers: Team responsible for building and enhancing the application.

d) Data Security and Privacy Experts: Professionals ensuring data protection and compliance with regulations.

Chapter 2

Project Description

The project aims to develop an AI-assisted writing management tool that addresses the key issues that are currently present in the creative writing space. This application will provide a range of features that will help writers streamline their creative writing process and organize their workflows, leading to enhanced storytelling and productivity.

2.1 Scope

This application will provide the user with a workspace dashboard that will contain structured writing tools such as chapter-wise writing and modifiable outline bars, collaborative writing, content customization and personalization, notes creation, language options (English/Urdu), version control, character development window, plot development window, and publishing options to help manage the writing process.

We will also provide AI-assisted tools such as English grammar checkers and an AI fine-tuned chatbot assistant that will aim to enhance the writer's productivity.

2.2 Modules

2.2.1 Module 1: Workspace Dashboard

This module will contain the structured writing tools that the user will use to streamline their workflow.

1. Chapter Organization and Outline Management:
   Users can manage their chapters separately, allowing them to focus on their con-

tent. Chapters can be reordered by a drag-and-drop feature allowing the user to restructure their document.

2. Collaborative Writing:
   Allow different users to gain access to the same existing project and collaborate on that project by being assigned different project roles and responsibilities. The project file will be fully synced for all collaborators so that the changes are updated in real-time for all users.

3. Content Customization and Personalization:
   Allow users to customize their project with different setting options, such as defining the theme or content style, allowing for more personalized content creation.

4. Notes Creation:
   Allow users to create and organize notes beside their written content to help manage their changes more easily, allowing for a smoother revision and editing process.

5. Version Control:
   Allow users to manage and track different project versions so that they can either return to a previous version or compare changes to maintain their content history with clarity.

6. Language Options (English/Urdu):
   The user will be able to create content using either English or Urdu depending on their preference, and the dashboard design elements will change according to the language selected.

7. Character Development Window:
   Allow users to create and manage their characters with more detail while ensuring they are contextually coherent with the project content. The user will have multiple options to create or change their character design and will be able to integrate these characters directly into their story workflow.

8. Plot Development Window:
   Allow users to create and manage their main plot and sub-plots according to their project preferences by providing many options to customize their plot design while ensuring it fits into the story easily.

9. Publishing Options:
   Allow users to publish their content on the web page after completion with different privacy options such as private or public, enabling other users to view the published content if the writer allows it.

2.2.2 Module 2: AI-Analysis Tools

This module will contain AI-assisted features that will allow the writer to enhance their existing stories through a fine-tuned chatbot and grammar-checking tools.

1. Fine-tuned AI-Assistant:
   A fine-tuned AI language model specifically designed to enhance existing written content by providing suggestions that will improve the overall flow and coherence of the content.[2],][1][3]

2. English Grammar Checker:
   A highly fine-tuned grammar-checking tool specifically designed for the English language, accurately identifying grammatical errors and improving the overall readability of the content.

2.3 Tools and Technologies

1. MongoDB: NoSQL database for flexible, scalable storage of user data, documents, and interactions. It is used for its schema-less structure, which allows easy data handling for dynamic content.

2. Express: Backend web framework in Node.js to handle routing, API requests, and server-side logic. It efficiently manages communication between the frontend and the LLM.

3. React: Frontend library for building responsive, dynamic user interfaces. It enables real-time interaction with the LLM, providing a smooth user experience.

4. Node.js: JavaScript runtime for server-side logic, enabling efficient handling of asynchronous operations and API requests. It connects React to the Flask-based LLM backend.

5. Hugging Face: Platform to fine-tune and deploy the LLM, making it accessible via API. It simplifies model training and inference for various text-based tasks.

6. Flask: Lightweight Python framework to serve the LLM as an API endpoint. It handles model inference requests, connecting the LLM to the rest of the app.

7. Pytorch/Tensorflow: Frameworks for training and deploying the fine-tuned LLM. Depending on model requirements, these provide efficient handling of deep learning tasks.

8. Figma: Design tool for creating the application's UI/UX, ensuring a consistent and visually appealing frontend. It helps translate designs into React components for implementation.

2.4 Work Division

Table 2.1: Work Division

Name	Registration	Responsibility/ Module / Feature
Mr. Saad Ahmed Qureshi	21i-0616	UI/UX Design (Module 1 and 2), Complete Front-End Framework Design
Mr. Muhammad Waleed Yaseen Mr. Syed Murtaza Kazmi	21i-0438 21i-0685	Data Modelling and Initial Model Training (Module 2.1, 2.2), AI-Assistant, Grammar Checker
Mr. Saad Ahmed Qureshi Mr. Syed Murtaza Kazmi	21i-0616 21i-0685	UI Development and Integration with Backend Features (Module 1 and 2)
Mr. Syed Murtaza Kazmi Mr. Muhammad Waleed Yaseen	21i-0685 21i-0438	Core Feature Development Part I (Module 1.1,1.2,1.3,1.4,1.5) Chapter Organization and Outline Management,Chapter Organization, Collaborative Writing, Content Customization, Version Control
Mr. Syed Murtaza Kazmi Mr. Muhammad Waleed Yaseen Mr. Saad Ahmed Qureshi	21i-0685 21i-0438 21i-0616	Core Feature Development Part II (Module 1.6,1.7,1.8,1.9) , Language Options (English/Urdu), Character Development Window, Plot Development Window,Publishing Options
Mr. Muhammad Waleed Yaseen Mr. Syed Murtaza Kazmi	21i-0438 21i-0685	Backend Testing and Optimization (Module 1, 2)
Mr. Saad Ahmed Qureshi	21i-0616	Frontend Debugging and User Experience Enhancement (Module 1 and Module 2)

2.5 Timeline

Table 2.2: Timeline

Iteration	Time frame	Tasks/Modules
1	Aug-Oct	UI/UX Design, Data preparation, LLM Training and Fine-tuning (Module 1, 2.1, 2.2)
2	Nov-Jan	UI Development and Integration with Backend Features, Core Feature Development Part I (Module 1 and 2)
3	Feb-Mar	Core Feature Development Part II (Module 1 and 2)
4	Apr-May	Backend Testing and Optimization, Frontend Debugging and User Experience Enhancement (Module 1 and 2)

Chapter 3

Conclusions

In conclusion this document provides a brief overview of the objectives, motivation, scope and work methodology of VerseCraft: The writing tool that will enhance creative writers and their works. By focusing on the key issues that plague writers today we aim to help writers by providing an all-encompassing workspace that will enhance their creative workflows while also being seamlessly easy to use and navigate.

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