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Pen Craft

Anupama P S[1] and Harikrishnan S R[2]
Student, MCA,CHMM College for Advanced Studies, Trivandrum, India[1]
Associate Professor, MCA,CHMM College for Advanced Studies, Trivandrum, India[2]

Abstract: *The Pen Craft Python project is a comprehensive endeavor aimed at developing asophisticatedwriting enhancement platform integrating Django web framework with machinelearning capabilities. This platform caters to three distinct user roles: admin, master writer, andwriter. Each role possesses specificfunctionalities tailored to their responsibilities within theplatform.Writers, upon regular login, gain access to a user-friendly interface allowing them to view masterwriters, submit writings, view marks, and access journals. The platform enables writers to uploadvarious forms of writing, including essays and poems, for evaluation and improvement.Master writers, with their login credentials, can oversee writers' activities, including reviewingsubmissions and assigning marks. Admins wield comprehensive control over the platform, including the ability to view marks, manageuser accounts. Additionally, admins have access to dashboards for monitoring platform activity andmanaging user roles. The development of this platform encompasses HTML, CSS, Python-Django, and machine learningtechnologies. By seamlessly integrating these components, the project aims to provide users with aunified environment for improving writing skills, receiving feedback, and fostering a collaborativewriting community. Through meticulous design and implementation, the platform aims to empower users to becomemore proficient and confident writers. By leveraging machine learning for personalizedrecommendations and feedback, the project seeks to revolutionize the landscape of writingenhancement tools, fostering a culture of continuous improvement.*

Keywords: Master Writer, Plagiarism Checker, Writing Feedback, Personalized Recommendations

I. INTRODUCTION

In the current landscape of writing enhancement tools, users face significant challenges due to fragmentation and limited functionality integration. Existing platforms lack cohesion across different features and user roles, forcing users to navigate multiple applications or services to access various writing improvement tools. This disjointed experience not only complicates workflow but also undermines efficiency and user satisfaction. Without advanced algorithms to analyze writing patterns, provide personalized feedback, and offer tailored recommendations, existing platforms fail to adapt to individual user needs effectively. This deficiency restricts users' potential for growth and development as writers, as they are unable to receive targeted insights and guidance that could significantly enhance their skills over time.Thus, the current state of writing enhancement tools leaves users grappling with fragmented functionalities and a lack of personalized support, hindering their ability to optimize their writing processes and achieve continuous improvement in their craft.

II. LITERATURE REVIEW

Several studies emphasize Django's effectiveness in building multi-role platforms due to its clear separation of concerns, modularity, and ability to integrate with various databases (Holovaty & Kaplan-Moss, 2009). In the context of writing platforms, Django's architecture is ideal for managing multiple user roles (admin, master writer, writer) due to its ability to implement role-based access control (RBAC) and its extensive library support for backend functionalities such as authentication and user management (Wlodarczyk, 2018).The integration of machine learning (ML) for writing enhancement has been gaining traction in recent years, with applications ranging from grammar and style suggestions to personalized feedback. Research indicates that Natural Language Processing (NLP), a branch of ML, has proven useful in analyzing text, generating suggestions, and identifying common writing errors (Chklovski, 2003). ML models, such as transformers (e.g., BERT, GPT), are now capable of understanding context and offering personalized recommendations (Devlin et al., 2019). Tools like Grammarly and ProWritingAid leverage these models

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to assist users in real-time. The Pen Craft project's aim to integrate ML for personalized writing suggestions is supported by a growing body of literature that confirms the effectiveness of these systems in enhancing writing quality through context-aware feedback (Nguyen et al., 2018).Pen Craft, the ability for master writers to review and provide feedback mirrors systems where mentors provide structured guidance, which has been shown to foster improved outcomes in collaborative environments (Soller, 2001). Admins, who manage users and oversee the platform's overall functioning, benefit from comprehensive dashboards that enable real-time monitoring, a feature found to be essential for maintaining platform security and functionality (Pereira et al., 2020).

III. PROPOSED METHOD

The proposed Pen Craft Hub Python project aims to address existing shortcomings by introducing a unified platform that offers a seamless and integrated experience for users across all expertise levels. Through careful design and implementation, the project will provide several key functionalities, including user authentication and role management, which will utilize Django's built-in authentication system and enforce role-based access control to ensure appropriate permissions for each user. Writers will have access to a user-friendly interface built with HTML and CSS, allowing them to view master writers, submit writings, receive feedback and suggestions, and access their journals and marks. Master writers will be provided with additional tools for overseeing writer activities, performing plagiarism and grammar checks, and evaluating creative content. Admins will have access to a comprehensive dashboard, enabling them to manage the platform and its users, add and edit writer marks, manage user accounts, and monitor platform activity.Additionally, machine learning models for plagiarism detection, grammar checking, and creative content evaluation will be integrated into the platform. These models will be developed using Python libraries such as TensorFlow or scikit-learn and deployed through Django's infrastructure.

IV. TECHNOLOGY USED

Python Django

Django is a robust and high-level web framework for Python that facilitates thecreation of dynamic and scalable web applications with remarkable efficiency. It adheresto the "batteries-included" philosophy, offering a comprehensive suite of built-in featuresthat simplify many aspects of web development. At its core, Django uses the ModelView-Template (MVT) architecture, which organizes code into three interconnected components: Models, Views, and Templates. database operations through Django's Object-Relational Mapping (ORM) system, whichabstracts and simplifies database interactions. Views manage the application's logic,processing requests and returning responses, while Templates manage the presentationlayer, dynamically generating HTML based on the data provided. One of Django'sstandout features is its powerful admin interface, which allows for efficient managementof application data through a user-friendly web-based interface, significantly acceleratingdevelopment and deployment. Django's URL routing system facilitates clean, readableURL structures and seamless mapping to views. Additionally, the framework is equippedwith strong security measures to protect against common threats such as SQL injection, ensuring that applications are secure by default. Django's modularity and scalability enable developers to build both small projects and large, complex applications while maintaining a cleanand organized codebase. Its extensive documentation and active community furtherenhance its usability, providing support and a wealth of third-party packages that extendthe framework's capabilities. Overall, Django's emphasis on rapid development, security,and scalability, combined with its rich feature set, makes it an exceptional tool fordevelopers looking to create high-quality web applications efficiently

Cascading Style Sheet(CSS)

CSS, or Cascading Style Sheets, is a core technology for styling web pages and applications, defining the appearance, layout, and formatting of HTML elements on screen. It enables developers to control aspects like colors, fonts, spacing, positioning, and responsiveness, allowing for consistent design across multiple pages. By separating style from content, CSS improves the flexibility and maintainability of websites, making updates easier and more efficient.Operating on a rule-based system, CSS uses selectors to target HTML elements, applying styles through declarations within curly braces. These styles can be applied inline within HTML elements, internally within a `<style>` tag in the document's head, or externally in linked .css files. This modular styling approach allows developers to create visually appealing,

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user-friendly web interfaces that adjust to different screen sizes and devices, improving the user experience across desktops, tablets, and smartphones.

Hypertext Markup Language (HTML)

HTML, or Hypertext Markup Language, is the foundational language of web development, used to create and structure content on the web. It provides the basic framework for organizing text, images, multimedia, and other elements into a structured and navigable format. HTML uses a system of tags and attributes to define elements like headings, paragraphs, links, lists, tables, and forms. Each element is enclosed in tags, such as `<h1>` for headings or `<p>` for paragraphs, to outline the structure and presentation of the content.HTML documents are arranged hierarchically, with nested elements forming a tree-like structure that enhances both the appearance and functionality of web pages. The latest version, HTML5, introduced new features, including semantic elements like `<header>`, `<footer>`, and `<article>`, which improve clarity and accessibility for users and search engines. HTML5 also includes native support for audio and video elements, minimizing the need for third-party plugins and simplifying multimedia integration.

V. DATABASE DESIGN

The most important aspect of building software systems is database design, which involves creating a set of interrelated files for real-time processing. The primary goal ofdatabase design is to make data access easy, inexpensive, and flexible for users. Database design defines the structure of business data used in client/server systems. The most crucial aspect of database design is identifying the necessary collections.This process involves designing the physical database, determining the access paths, andimplementing these paths using mechanisms such as pointers or chains.

Author

Field Name	Datatype	Constraints	Description
aid	Int	Primary Key	Unique identifier for author
uid	Int	Foreign Key	One-to-one relation with User
aname	Varchar (30)	Not Null	Name of the author
contact	Varchar (11)	Not Null	Contact number of the author
email	Varchar (30)	Not Null	Email of the author
qualification	Varchar (max)	Not Null	Qualification of the author
location	Varchar (30)	Not Null	Author is from which location
address	Varchar (30)	Not Null	Address of the author
city	Varchar (30)	Not Null	Author is from which city
state	Varchar (30)	Not Null	Author is from which state
photo	Varchar (max)	Not Null	Profile pic of author

Login

Field Name	Datatype	Constraints	Description
lid	Int	Primary Key	Unique identifier for login
uid	Int	Foreign Key	One-to-one relation with User
email	Varchar (30)	Not Null	Email with which user registered in to the application
password	Varchar (30)	Not Null	Password entered while registered in to the application
user type	Varchar (10)	Not Null	Whether an author, master, admin

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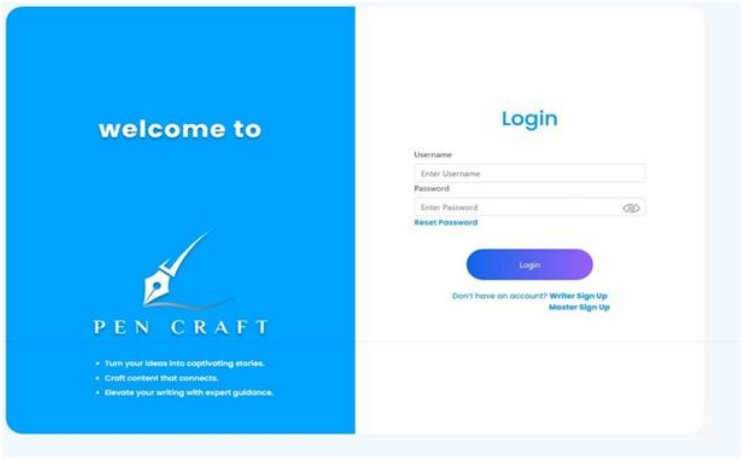
Feedback details

Field Name	Datatype	Constraints	Description
fid	Int	Primary Key	Unique identifier for each feedback
submission_id	Int	Foreign Key (Writing)	The submission thefeedback is for
spelling_mark	Float	Not Null, Default:0	Marks for spelling
plagiarism_mark	Float	Not Null, Default:0	Marks for plagiarism check
grammar_mark	Float	Not Null, Default:0	Marks for grammar check
total_mark	Float	Not Null, Default:0	Total marks
reviewed_by	Varchar (30)	Not Null	Username of the reviewer

VI. FUTURE SCOPE

The system is designed to efficiently perform routine tasks, with most functionalities already developed. However, it can be improved with minor adjustments. Clear documentation of the code facilitates easy modifications or additions. Should the code need updates in the future, the original developer can assist with the process. Enhancements can be made seamlessly, without introducing unnecessary complexity.These improvements could involve adding new features, simplifying data formatting, or strengthening the code's reliability. By using this system, users can enjoy improved services and faster processing. Additionally, integrating advanced AI can offer real-time suggestions for grammar, style, and context, providing personalized feedback tailored to individual writing styles. Interactive workshops and tutorials on writing techniques can also be introduced, offering writers structured educational content and practical exercises to further develop their skills.

VII. RESULT



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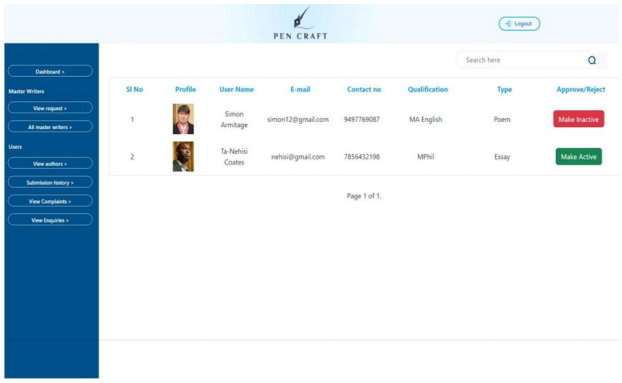

VIII. CONCLUSION

The Pen Craft Python project represents a groundbreaking development in the field of writing enhancement and mentorship. By seamlessly integrating Django and machine learning technologies, the platform offers a dynamic and user-centric environment that caters to the diverse needs of writers, master writers, and administrators.Writers benefit from a streamlined process to manage their submissions, receive actionable feedback, and connect with experienced master writers who can provide valuableguidance. The platform's features, such as tracking submission status and viewing detailedfeedback, empower writers to refine their craft and achieve their creative goals.Master writers are equipped with robust tools to evaluate submissions, performplagiarism and grammar checks, and offer constructive feedback. Their role is crucial innurturing and developing emerging talent, and the platform's features facilitate this by enabling efficient management of submissions and communication with writers.Administrators gain comprehensive oversight with access to analytics, user managementcapabilities, and submission tracking. This empowers them to ensure the smooth operationof the platform, maintain high standards, and address any issues promptly.The integration of machine learning enhances the platform's ability to provideaccurate and insightful feedback, further supporting the continuous improvement ofwriting skills. The Pen Craft Python project not only fosters a collaborative andsupportive writing community but also sets a new standard for writing enhancementplatforms by combining technology with creativity. In conclusion, The Pen Craft Pythonproject is poised to make a significant impact on the writing industry, offering valuableresources for writers and mentors alike. Its innovative approach to writing enhancementand mentorship highlights its potential to elevate the writing experience and contribute the success of its users.

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REFERENCES

[1]. Pressman, R. S., & Maxim, B. R. (2019). Software Engineering: A Practitioner's Approach (9th ed.). McGraw-Hill Education.
[2]. Fowler, M. (2018). Refactoring: Improving the Design of Existing Code (2nd ed.). Addison-Wesley Professional.
[3]. Gamma, E., Helm, R., Johnson, R., &Vlissides, J. (1994). Design Patterns: Elements of Reusable Object-Oriented Software. Addison-Wesley Professional
[4]. Martin, R. C. (2008). Clean Code: A Handbook of Agile Software Craftsmanship. Prentice Hall.
[5]. Nielsen, J. (1995). Usability Engineering. Morgan Kaufmann.
[6]. MySQL Documentation. (2024). MySQL 8.0 Reference Manual. Oracle Corporation.
[7]. Mozilla Developer Network (MDN). (2024). MDN Web Docs. Mozilla Foundation