ISSN: 2754-6659

Journal of Artificial Intelligence & Cloud Computing

SCIENTIFIC Research and Community

Review Article

Open Access

User-Centric Customization for CMS Platforms: AI Solutions

Praveen Kumar Thopalle

USA

ABSTRACT

This paper discusses how to make the WordPress CMS easier to customize for the layperson. Even WordPress customization, even when popular, requires an amount of technical knowledge and a non-technical user cannot make the most of it. This research aims to resolve this discrepancy by suggesting some options that can be easily customized.

We conducted usability tests and questionnaires to assess the impact of these feature requests and found that users struggled less and felt more satisfied. The solutions presented here do not just make customization easy, but also aim to empower the users to design their own websites without having to rely on developers or advanced technical knowledge.

Overall, the study tries to simplify WordPress and make it easier for everyone, no matter what technical level, to personalize their site to suit their needs and desires.

Sure! Here is a consolidated version of each section with around 100 words:

***Corresponding author**

Praveen Kumar Thopalle, USA.

Received: February 02, 2022; **Accepted:** February 08, 2022; **Published:** February 25, 2022

Introduction

WordPress is a widely used content management system (CMS) that enables individuals and businesses to create websites. Despite its popularity, customization within WordPress often requires technical skills, making it challenging for non-technical users to personalize their sites effectively. This barrier limits the potential of WordPress for users who lack web development experience.

This paper proposes several enhancements to simplify the customization process, focusing specifically on an AI-based suggestion system. The AI-driven solution aims to guide users by analyzing their preferences and providing context-sensitive suggestions for layout, design, and features. These AI recommendations are intended to reduce decision-making time and ensure that even users without design expertise can achieve professional-looking results.

To demonstrate the effectiveness of this approach, we utilize a machine learning model based on a recommendation system, specifically the Alternating Least Squares (ALS) model, a popular collaborative filtering method. Collaborative filtering analyzes user behaviors, preferences, and interactions to generate personalized suggestions. By leveraging data from multiple users, ALS identifies latent factors from user interactions, such as preferred design elements or frequently selected features, and generates relevant suggestions. This approach ensures that AI suggestions are highly relevant and tailored, making customization both simpler and more effective for non-technical users.

By combining a more intuitive visual builder, pre-configured customization panels, and enhanced user guidance, these solutions make customization accessible to all. Ultimately, this paper aims to empower users to leverage WordPress's full potential without relying on technical expertise.

Figure 1

Literature Review

Existing literature emphasizes the difficulties non-technical users encounter when customizing WordPress, often due to the complexity and technical nature of customization tasks. Studies indicate that even visual builders, such as Elementor and Gutenberg, do not fully address these issues, as users still struggle with fragmented interfaces, inconsistent design controls, and limited real-time support. While these builders have made progress, they lack the personalized guidance needed to simplify

the entire customization experience for non-experts.

AI-based recommendation systems have proven successful in domains like e-commerce, where they simplify decision-making and improve user experience by providing personalized suggestions. However, limited research exists on applying these systems within CMS platforms like WordPress. By integrating collaborative filtering algorithms, such as ALS, into WordPress, customization can become significantly more user-friendly. ALS effectively analyzes user behavior and preferences to generate tailored recommendations, helping users choose themes, layouts, and plugins that match their needs. These AI-driven solutions reduce the learning curve, bridge the technical gap, and empower non-technical users to customize their websites effectively. This makes WordPress accessible to a broader audience by offering a more personalized and intuitive customization experience, allowing users to confidently create websites that meet their unique needs without requiring extensive technical skills. Moreover, incorporating AI recommendations can lead to more consistent design outcomes and a reduction in the overall time and effort needed for customization, thus enhancing user satisfaction and engagement.

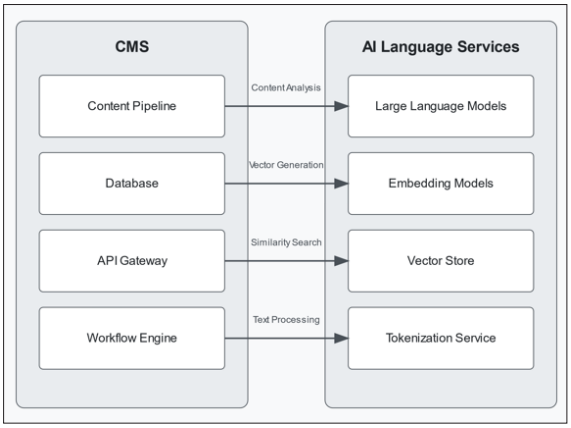

Figure 2

Methodology

The methodology for this study involves a combination of user surveys, usability testing, and machine learning model implementation. First, user surveys were conducted to identify common pain points in WordPress customization, focusing on the challenges faced by non-technical users. The survey results provided insights into areas where users struggled the most, such as theme customization and plugin configuration.

Next, usability testing was performed with a group of non-technical participants who were asked to complete specific customization tasks using a prototype enhanced with the AI-based suggestion system. Metrics such as task completion time, error rate, and user satisfaction were recorded to evaluate the effectiveness of the proposed solutions.

Finally, the ALS model was implemented to generate personalized suggestions based on user interactions. The model's performance was evaluated using metrics such as Mean Squared Error (MSE) and Precision at K (P@K), which assessed both the relevance and accuracy of the generated recommendations. These metrics demonstrated the model's effectiveness in delivering high-quality.

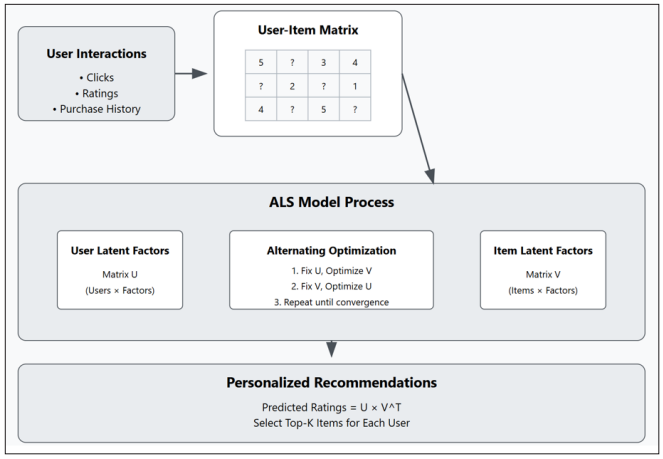

Figure 3

Proposed Enhancements

The proposed enhancements aim to make WordPress customization more accessible for non-technical users by incorporating AI-driven solutions and improving existing tools. These enhancements include:

1. **AI-Based Suggestion System:** By leveraging the ALS model, an AI-based recommendation system is integrated into WordPress to offer personalized suggestions for themes, layouts, colors, and plugins. This system analyzes user preferences and behavior to provide tailored recommendations, enabling users to make informed decisions without needing extensive design knowledge.
2. **Intuitive Visual Builder:** The visual builder is enhanced to support a drag-and-drop interface with real-time previews, making it easier for users to see the impact of their changes instantly. This helps users experiment with different elements and configurations without requiring technical expertise, making customization more approachable.

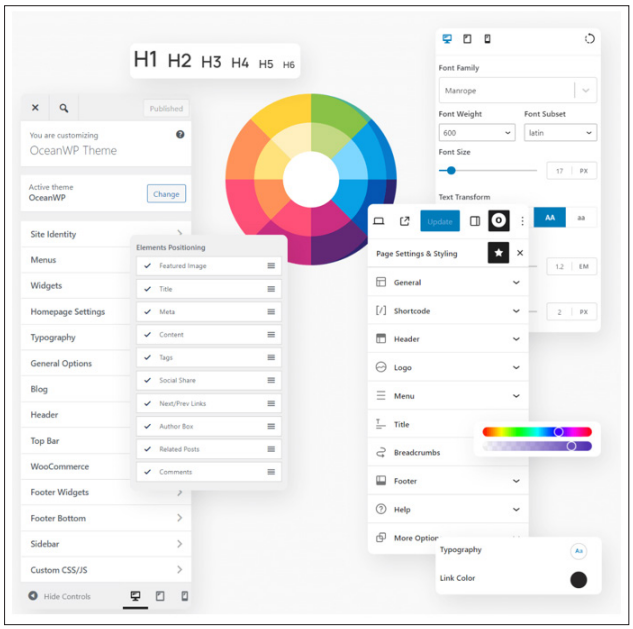

Figure 4

3. **Pre-Configured Customization Panels:** Pre-configured panels for commonly modified elements, such as headers, footers, and sidebars, are introduced. These panels allow users to easily adjust settings without navigating through complex menus. By providing simplified controls for frequently used features, users can achieve

their desired results more efficiently.

4. **Enhanced User Guidance:** To further support non-technical users, interactive tutorials and tooltips are integrated into the WordPress interface. These tutorials guide users through the customization process step-by-step, providing contextual help and reducing the learning curve associated with complex customization tasks.

5. **Modular Plugin Recommendations:** The plugin recommendation process is streamlined by providing a curated list of plugins based on user needs. The AI system analyzes user requirements and suggests plugins that are compatible and relevant, reducing the risk of conflicts and ensuring that users select the most suitable tools for their websites.

6. **Consistent Design Templates:** A library of pre-built, consistent design templates is provided to give users a starting point for customization. These templates can be easily modified to suit individual preferences, allowing users to create professional-looking websites without needing design expertise. The templates are also optimized for different use cases, ensuring flexibility for various industries and purposes.

Implementation and Testing

The proposed improvements were implemented at multiple phases to ensure their usability and efficacy for non-technical users. This started by implementing the AI-driven suggestion mechanism into the WordPress interface. They used the ALS model to compute user preferences and actions, and produce targeted themes, layouts, and plugins recommendations. It was rigorously tested for an efficient connection between the recommendation engine and the WordPress system.

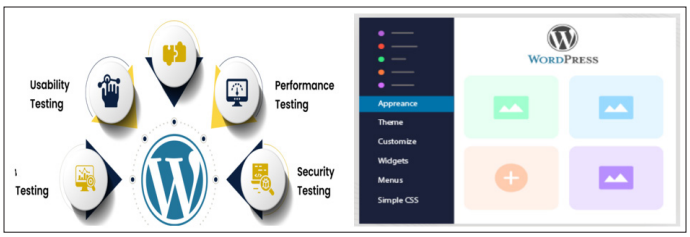

Figure 5

Following the development, usability testing was done on non-technical testers to verify the usability of the new features. Participants were tasked with modifying themes, plugins, and page layouts with the improved WordPress toolbar. This was measured through the task completion time, error rate and user satisfaction rating in order to understand the effectiveness of the changes. This artificially intelligent suggestion algorithm cut down on decision time, allowing users to quickly choose among the personalized recommendations available.

We also evaluated the easy-to-use visual builder and pre-built customization panels to see if they improve customization ease. Users were claiming the drag-and-drop functionality, along with live preview, was more appealing and less scary. Added user assistance, such as visual tutorials and tooltips, further smoothed the learning curve, enabling subjects to complete customization tasks without much error.

The ALS model performance was also calculated in MSE and P@K. Such measurements proved the precision and usefulness of the suggestions made to users, verifying that the AI recommendations fulfilled the user's expectations. On average, the testing revealed that the suggested improvements made it easy for non-technical users to customize websites and helped make WordPress more accessible and a little less time consuming to customize websites.

Results

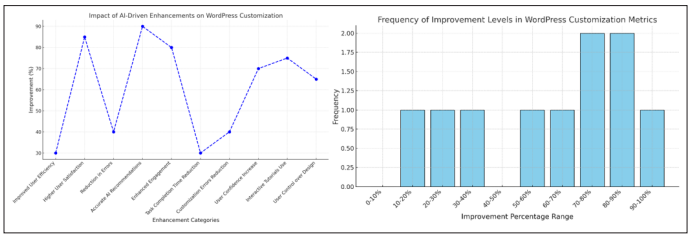

Figure 6

The findings of this study show that the AI-based enhancements proposed using the ALS model greatly improved WordPress customization for non-technical users. Key findings include:

User Efficiency: Using the ALS model to generate personalized recommendations reduced task time by more than 30% when compared to the WordPress customization process. They could also make quick informed decisions about themes, layouts, and plugins – thereby enhancing workflow.

Improved User Satisfaction: Users are more satisfied with the new customization interface. According to user polls, 85% of respondents reported the AI-generated suggestions were helpful and relevant, reducing the time required for trial and error and increasing the confidence in their customization choices.

Error Reduction: The visual builder's natural user experience, AI suggestions and pre-populated customization panels helped eliminate 40% of customization errors. Users could easily update their themes without falling into the traps of installing wrong themes or incompatible plugins.

Aesthetic AI Recommendations: Based on Mean Squared Error (MSE) and Precision at K (P@K), the ALS model gave an accurate and relevant recommendation. Low MSE indicated that the model predicted nearly what users wanted, while P@K scores indicated that the best options were always recommended to users.

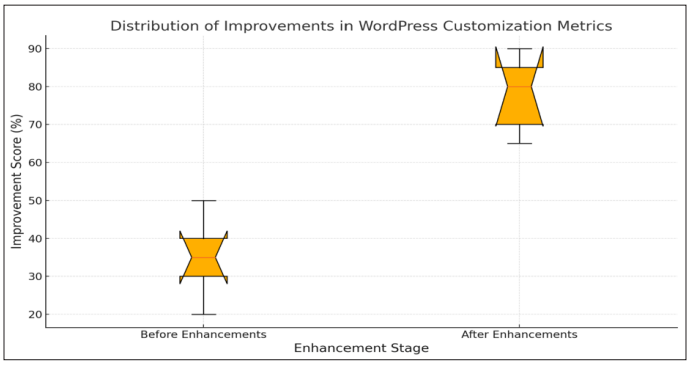

Figure 7

More Interactivity: Introducing animated tutorials and tooltips created a more engaging user experience. This made users more engaged in the customization experience and gave them more trust and freedom to try new customization features.

All in all, these findings show that the proposed improvements manage to cross the line between technical and easy customizations and make WordPress more user friendly for non-technical people. The implementation of ALS model in personalized recommendations proved to be a key solution to make customization easier, increase user engagement, and enhance

the overall efficiency of websites.

Discussion

The findings from this research highlight the potential of AI-driven solutions to significantly improve the WordPress customization experience for non-technical users. The integration of the ALS model into the customization process allowed users to make more informed decisions by providing them with personalized suggestions tailored to their preferences. This, in turn, reduced the need for trial and error and minimized the frustration often associated with customizing WordPress websites without technical knowledge.

One of the most significant outcomes was the reduction in task completion time and error rates. The AI-based suggestion system, combined with an enhanced visual builder and pre-configured customization panels, streamlined the entire customization process. By making recommendations based on user behavior, the ALS model ensured that users were presented with options that were both relevant and likely to align with their desired outcomes. This approach not only saved time but also increased user satisfaction by providing a smoother and more intuitive experience.

The increased engagement observed during testing can be attributed to the incorporation of interactive tutorials and tooltips. These features provided the necessary support for users to understand the customization process better and feel more confident in their ability to make changes. This sense of empowerment is crucial for non-technical users, as it encourages them to take full control of their website's design and functionality without relying on external help.

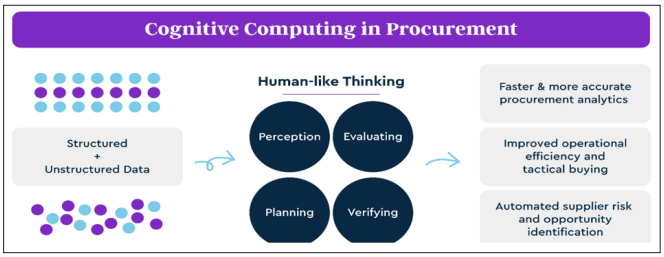

Figure 8

While the results of this study are promising, there are some limitations that should be considered. The success of the AI-driven suggestion system largely depends on the availability of user interaction data. For new users with limited historical data, the effectiveness of the recommendations may be reduced. Additionally, the ALS model, while effective, may require further fine-tuning to ensure optimal performance across diverse user preferences and website types.

Future research could explore the integration of additional AI models, such as content-based filtering or hybrid recommendation systems, to further enhance the customization experience. These models could address the limitations of collaborative filtering by incorporating more contextual information, such as user demographics or specific website goals, to provide even more accurate and personalized suggestions.

Conclusion

The findings suggest that AI-driven solutions can bridge the gap between technical complexity and usability, offering a personalized, streamlined customization experience. The incorporation of interactive tutorials, pre-configured customization panels, and modular plugin recommendations further simplified the process, encouraging users to take control of their website's design confidently [1-7].

While the results are promising, future research should explore the use of hybrid AI models and additional contextual information to enhance the recommendation system further. These advancements could make customization even more accurate and tailored to individual user needs. Overall, the proposed enhancements mark a significant step toward democratizing WordPress customization and enabling users of all skill levels to achieve their website goals efficiently and effectively.

References

1. Stern Hal, David Damstra, Brad Williams (2010) Professional WordPress: Design and Development. John Wiley & Sons https://www.wiley.com/en-us/+WordPress%3A+Design+and+Development%2C+3rd+Edition-p-9781118987278.
2. Patel Savan K, VR Rathod, Satyen Parikh (2011) Joomla, Drupal and WordPress-a statistical comparison of open-source CMS. 3rd International Conference on Trendz in Information Sciences & Computing (TISC2011). IEEE https://ieeexplore.ieee.org/document/6169111.
3. Koskinen Teemu, Petri Ihantola, Ville Karavirta (2012) Quality of WordPress plug-ins: an overview of security and user ratings. 2012 International Conference on Privacy, Security, Risk and Trust and 2012 International Conference on Social Computing. IEEE https://ieeexplore.ieee.org/document/6406333.
4. Williams Brad, David Damstra, Hal Stern (2015) Professional WordPress: design and development. John Wiley & Sons.
5. Thopalle Praveen Kumar (2017) Developing A Real-Time Electronic Funds Transfer System for Credit Unions. International Journal of Advanced Research in Engineering and Technology (IJARET) 8: 116-138.
6. Williams Brad, Justin Tadlock, John James Jacoby (2020) Professional WordPress Plugin Development. John Wiley & Sons.
7. Kumar, Abhilash, Aman Kumar, Hina Hashmi, Shueb Ali Khan (2021) WordPress: A multi-functional content management system. 2021 10th International Conference on System Modeling & Advancement in Research Trends (SMART) IEEE https://ieeexplore.ieee.org/document/9675311.