

# Evaluation of a Platform that Optimizes User Interaction Real-Time Google Trends-based AI Blog

Pavan K. Kommi

Department of Computer Science  
Southeast Missouri State University

Sai V. Avula

Department of Computer Science  
Southeast Missouri State University

Ankita Maharjan

Department of Computer Science  
Southeast Missouri State University

Suhair Amer

Department of Computer Science  
Southeast Missouri State University

## ABSTRACT

This paper evaluates the Radiorogue platform [1], which generates real-time content with AI and Google Trends. Inspired by Human-Computer Interaction (HCI) concepts, the design emphasizes user-centered strategies to provide intuitive and efficient interface. To effectively fulfill the demands of users, the process includes gathering requirements, iterative prototyping, and usability testing. Key strategies include simplifying navigation, increasing content discoverability, and minimizing cognitive burden, allowing for seamless exploration of popular AI-generated blogs. By prioritizing real-time performance, rapid content delivery, and cost-effectiveness this platform provides responsive and scalable user experience.

## Keywords

AI-Generated Blogs, Google Trends, Human-Computer Interaction (HCI), User-Centered Design.

## 1. INTRODUCTION

In the rapidly evolving digital landscape, the convergence of artificial intelligence (AI), real-time trend analysis, and user interaction presents unprecedented opportunities and challenges. This project focuses on optimizing user interaction on Radiorogue [1], a real-time Google Trends-based AI blog platform. Sharma and Tiwari [2] provide valuable insights into UI/UX design principles and tools that can significantly enhance user interaction with digital platforms. Their study emphasizes the importance of intuitive design, user-centered approaches, and the latest tools available for creating engaging interfaces. Implementing these principles could lead to a more seamless and enjoyable user experience, potentially increasing user retention and satisfaction. Chen's [3] research on optimizing search engine results through user interaction offers crucial insights for improving content discovery on Radiorogue. The study explores how user behavior and preferences can be leveraged to refine search algorithms and enhance content relevance. By analyzing user interactions such as click-through rates, time spent on pages, and search query modifications, Chen demonstrates how search results can be personalized and improved over time. These insights are crucial for Radiorogue's search functionalities, helping deliver relevant and personalized results.

The ethical implications of AI-generated content are a critical consideration for our project. Wittenberg et al. [4] address the crucial topic of labeling AI-generated content, exploring the promises, perils, and future directions of this practice. Ziakis and Vlachopoulou [5] offer cutting-edge insights into the role of AI in enhancing website visibility and user engagement. Their work explores how AI technologies can be leveraged to optimize various aspects of SEO, from keyword analysis to content structuring and user behavior prediction.

The ethical considerations surrounding AI-written content in academic publishing, as explored by Lund et al. [6], have broader implications for platforms like Radiorogue. While focused on scholarly publishing, their study raises important questions about the authenticity, quality, and potential biases of AI-generated content. The authors discuss the challenges of maintaining academic integrity in an era of large language models and propose ethical guidelines for the use of AI in content creation. Understanding user behavior in the context of online information dissemination is crucial for platforms dealing with real-time content. The study by Aishwarya C. et al. [7] on the effects of user behavior in the propagation of fake news on social media provides valuable insights into how users interact with and share information online. Their findings on the factors that influence the spread of misinformation could inform Radiorogue's content moderation strategies and user education initiatives. The technical aspects of website architecture play a significant role in user experience and SEO performance. Kowalczyk and Szandala's [8] research on enhancing SEO in Single-Page Applications (SPAs) versus Multi-Page Applications (MPAs) is particularly relevant to Radiorogue's development. Their study compares the SEO challenges and opportunities presented by different web application architectures, offering strategies to optimize SPAs for search engine discoverability. Fergusson et al. [9] provide a comprehensive overview of generative AI's impact and potential paths forward. Their report likely covers a wide range of topics, from the technical capabilities of current AI systems to the societal and ethical implications of widespread AI adoption. Natural Language Processing (NLP) techniques, particularly sentiment analysis, can significantly enhance user interaction on platforms like Radiorogue. Gunasekaran's [10] comprehensive review of sentiment analysis techniques in NLP provides a solid foundation for implementing these capabilities. The study likely covers various approaches to sentiment analysis, from rule-based methods to advanced machine learning techniques.

At the core of Radiorogue's functionality lies the utilization of Google Trends data. Rayhan's [11] exploration of Google Trends, its applications, limitations, and future directions, is therefore of paramount importance to our project. This research likely provides in-depth insights into effectively leveraging Google Trends data for content generation and user engagement. While more dated, the work of Choi and Varian [12] on predicting the present with Google Trends remains foundational to projects like Radiorogue. Their research demonstrates the potential of Google Trends data in forecasting current events and interests across various domains. For Radiorogue, this study underscores the value of real-time trend

data in content generation and highlights potential applications beyond mere reactivity to trends. The legal landscape surrounding AI-generated content is complex and rapidly evolving. Werzansky-Orland's [13] study on AI-generated content and copyright questions addresses crucial legal considerations for platforms like Radiorogue. The ongoing legal discussions surrounding AI and copyright are crucial for platforms generating AI content. Hristov's [14] exploration of AI and the copyright dilemma, while not the most recent, provides valuable historical context and highlights enduring legal questions. Ensuring the originality and integrity of AI-generated content is paramount for maintaining user trust and platform credibility. Singh et al.'s [15] study on plagiarism checking using various similarity measures offers valuable insights for implementing content validation processes on Radiorogue.

User engagement is a critical factor in the success of any digital content platform. O'Brien's [16] exploration of user engagement in online news interactions provides valuable insights that can be applied to Radiorogue. The study likely identifies key factors that influence how users interact with digital content, such as content relevance, presentation style, and interactive features. In the realm of technical SEO optimization, Devarapalli's [17] work on elevating frontend code for better SEO rankings offers practical strategies for improving Radiorogue's visibility in search results. The research likely covers various frontend optimization techniques, such as proper HTML structuring, efficient use of meta tags, and optimization of page load times. Sentiment analysis can provide valuable insights into user perceptions and content performance. Sindhura's [18] study on sentiment analysis using NLP and machine learning offers a deeper dive into the technical aspects of implementing these capabilities. The research likely covers various machine learning algorithms and NLP techniques for accurately determining sentiment in text data. As Radiorogue generates content based on trending topics, ensuring content diversity and preventing repetition is crucial. Mishra et al.'s [19] research on similarity search for detecting near duplicates offers valuable strategies for maintaining content quality. The study likely explores various text embedding models and similarity measurement techniques for efficiently identifying similar or duplicate content. The transition to more widespread human interaction with AI systems presents both challenges and opportunities. Xu et al.'s [20] study on this transition offers valuable insights for platforms like Radiorogue that facilitate user interaction with AI-generated content. The research likely covers emerging best practices in designing human-centered AI interfaces and addresses potential user concerns or expectations when interacting with AI systems. Finally, the potential synergies between different trend detection sources are explored in Giummolè et al.'s [21] work on using Twitter trending topics to improve predictions of Google hot queries. While focused on Twitter and slightly older, this research demonstrates the value of cross-platform trend analysis.

## 2. METHODS

Radiorogue[1], is a real-time AI-driven blog platform, that designed and evaluated using a user-centered methodology. The major goal was to develop a platform that provides real-time, tailored content in line with current trends, all while assuring a seamless, engaging, and intuitive user experience. This section explains the processes for identifying user needs, defining important tasks, and evaluating optimized Radiorogue's usability.

### 2.1 Design Goals

The design goals aim to prioritize usability, engagement, and a smooth user experience. Emphasizing simplicity, efficiency, and

personalization, it strives to meet the needs of diverse users while fostering a sense of community. Below are the detailed design goals:

Next are the usability goals:

- **Navigation and Search:** The platform is designed with intuitive menus and clear links allowing users to quickly access categories and focus on content discovery. A robust search system further enables effortless retrieval of blogs and related contents by keyword, topic, or category, returning accurate and relevant results.
- **Mobile Responsiveness:** Built with a mobile-first approach layouts, typography, and interactions are optimized for smaller screens, ensuring seamless experience across devices.
- **Accessibility Compliance:** Accessibility is a core consideration, with the platform adhering to web standards such as ARIA roles, proper contrast ratios, and keyboard navigation. This ensures usability for individuals with diverse needs, including those with disabilities.

Next are the user experience goals:

- **Interactivity and Visual Design:** The platform features a bold and dynamic visual design with carefully curated typography, color schemes, and layouts. Interactive elements, such as related blog suggestions, collapsible menus, and smooth transitions enhance engagement and make the browsing experience enjoyable.
- **Content Relevance:** By leveraging real-time data from Google Trends, the platform delivers personalized and trending content ensuring that every visit feels fresh and aligned with users' interests.
- **Trust and Security:** Building user trust is paramount, achieved by ensuring data security and sanitizing all displayed content.

### 2.2 Evaluation Questions for Usability and User Experience

To ensure that the design goals are met effectively, the following questions have been derived from the key usability and user experience objectives.

Some of the usability questions included:

1. Can users quickly navigate to categories like "What's Hot," "Money Moves" with minimal effort?
2. Is the interface fully responsive, providing a seamless experience across devices, including mobile and tablet?
3. Does the search functionality allow users to efficiently find blogs and related content?
4. Is the loading times optimized to ensure a smooth and fast user experience?
5. Does the platform comply with web accessibility standards, such as ARIA roles, adequate contrast ratios, and keyboard navigation?

Some of the user experience questions included:

1. Does the visual design of the platform align with the bold and dynamic aesthetic of the Radiorogue[1] brand?
2. Is the content fresh, relevant, and personalized based on real-time Google Trends to keep users engaged?
3. Does the platform ensure trust by delivering sanitized and secure content to its users?
4. Are interactive features, such as related blog suggestions or collapsible menus, engaging and easy to use?
5. Are feedback mechanisms, like liking or commenting on blogs, intuitive and user-friendly?

## 2.3 Main Tasks

Radiorogue's system design focuses on fulfilling essential user demands and requirements, which guide its core functionalities. These tasks are vital to delivering a seamless user experience and ensuring the system aligns with the expectations of its users while maintaining operational efficiency. For user needs, general users of the platform require access to fresh and relevant blogs based on trending topics in real-time. They expect the platform to be organized into intuitive sections allowing them to explore content quickly and effortlessly. Users demand high-quality and engaging blog posts that are readable, relevant, and free from duplicates or irrelevant information. A smooth and responsive browsing experience is essential, whether users access the platform via desktop or mobile devices. Furthermore, robust search functionality and filtering options are critical to ensuring content discoverability. From the platform's perspective, achieving these goals necessitates an automated workflow that handles trend fetching, blog generation, and publishing without manual intervention. The platform must integrate reliably with the Google Trends API to fetch real-time and daily trends while ensuring the accuracy and relevance of the data. Advanced algorithms for duplicate detection are crucial to maintaining the originality of the content. To ensure reliability, the system must incorporate continuous monitoring, error tracking, and quick recovery mechanisms.

For user requirements, general users, the system must provide fresh and relevant blogs that align with Radiorogue's original design. Content should be clearly categorized into sections making exploration intuitive and efficient. A responsive design is necessary to enable seamless interaction across devices, coupled with fast-loading pages for an enhanced UX. A robust search bar should allow users to locate blogs by title, keywords, or related topics with minimal effort. For the platform, periodic fetching of trends from the Google Trends API is a fundamental requirement. Blogs are automatically generated using GPT-4o-Mini, leveraging predefined prompts to ensure relevance and engagement. NLP techniques such as cosine similarity, Levenshtein distance, and Jaccard similarity must be employed to detect and eliminate duplicate or overly similar content. Scheduled automation through cron jobs ensures regular updates, while tools like Winston and Sentry provide comprehensive error tracking and monitoring for smooth operation. The main tasks list was divided between users and platform. For users, the platform enables effortless exploration of categorized blogs sections. Users can search for specific blogs using keywords or phrases and consume fresh, engaging content directly from the homepage or designated sections. The design ensures that users can navigate seamlessly between categories and pages, regardless of their device. For the platform, the primary tasks include fetching trending topics from the Google Trends API filtering relevant trends and generating blogs with GPT-4o-Mini aligned with the platform's tone. Duplicate detection algorithms are employed to ensure the originality of the generated content, which is then automatically published under predefined categories. Performance-enhancing techniques like lazy loading and caching are utilized to optimize content delivery. Finally, the system logs and monitors all processes, including API calls, content generation, and publishing, to ensure reliability and troubleshoot potential issues effectively.

## 2.4 Models

The conceptual model of the platform defines how the system operates to deliver trending and engaging blog content. At its core, the platform integrates external data sources, processing logic, and a user-facing interface to create a seamless content

delivery system. Inputs are primarily gathered from the Google Trends API, which provides real-time and daily trending topics which are filtered based on relevance to predefined categories. Using tailored prompts, the GPT-4o-Mini model generates high-quality, contextually relevant blogs aligned with the platform's bold and unfiltered tone. The generated content undergoes duplicate detection using advanced NLP techniques, including cosine similarity, Jaccard similarity, and Levenshtein distance. This ensures that no two blogs share excessive similarity, maintaining content originality. The final step involves categorizing the blogs and publishing them to the platform, where users can easily access them through the intuitive interface.

The mental model reflects how users perceive and interact with the platform. Users see it as a reliable source of timely, engaging content with a bold, professional tone. They expect a user-friendly, responsive interface for effortless navigation and efficient searching, including a seamless mobile experience. Automated content updates and intuitive design reinforce trust, align system functionality with user expectations, and encourage repeated use, ensuring both operational efficiency and user satisfaction.

## 2.5 Design

The design focuses on creating a seamless integration of programming and interface components to deliver a reliable and engaging platform for its users. This section outlines the design idea, considerations, and issues encountered during the development of the programming and interface components. The primary design idea is to automate the generation and delivery of trending blogs, ensuring a bold and unfiltered UX. The system integrates real-time data from the Google Trends API with advanced content generation powered by GPT-4o-Mini. The backend is designed to handle periodic updates, process trends efficiently, and deliver fresh content while maintaining a high standard of reliability and security. The interface design aligns with the bold aesthetic of the brand, emphasizing simplicity and responsiveness. Users can quickly access categorized content such as "What's Hot," "Tech Pulse," and "Money Moves" through an intuitive layout. The design prioritizes mobile-first principles, ensuring usability across various devices and screen sizes.

Key considerations guided backend and frontend development. Backend priorities included scalability, efficient trend processing with NLP-based duplicate detection, security, and automated content updates. Frontend design focused on usability, mobile-first responsiveness, visual clarity, accessibility, and performance optimization. Challenges included handling near-duplicate content, dependency on the Google Trends API, cross-browser/device consistency, and refining navigation and layouts for smaller screens while maintaining the platform's bold visual identity.

## 2.6 Functionalities

The platform provides a comprehensive range of functionalities to deliver a seamless, engaging, and automated user experience. For general users, the platform ensures real-time content delivery by continuously generating blogs based on the latest trends. A robust search functionality further enhances usability, enabling users to locate blogs using keywords or phrases with accuracy and relevance. To ensure accessibility, the platform adopts a responsive design, delivering a smooth browsing experience across devices, whether desktops, tablets, or smartphones. Performance is further optimized with techniques like lazy

loading and caching, ensuring fast loading times and uninterrupted navigation.

The backend is built with automation and efficiency as core principles. Real-time and daily trends are fetched periodically from the Google Trends API, forming the foundation for automated blog generation. Using GPT-4o-Mini, the platform generates high-quality and relevant content. Advanced NLP algorithms, including cosine similarity and Levenshtein distance, are employed to detect and prevent duplicate or overly similar blogs, ensuring the originality of published content. The system automatically categorizes and publishes generated blogs, eliminating the need for manual intervention. To maintain reliability and stability, the system integrates robust backend features such as scheduled automation using cron jobs. These tasks ensure timely API calls, trend processing, and blog generation at regular intervals. Error tracking and monitoring tools like Winston and Sentry are implemented to log and resolve issues in real-time, enhancing system reliability. Additionally, the platform employs performance optimization techniques, such as dynamic imports and asset minification, to reduce server load and enhance user interactions.

By integrating these functionalities, the system achieves a balance between user satisfaction and operational efficiency. The platform delivers engaging, trending content while maintaining high standards of reliability, performance, and automation, ensuring a consistent and enjoyable experience for its users.

## 2.7 Tools

The development of the platform required a variety of programming languages, frameworks, libraries, and tools to ensure its smooth operation, scalability, and user-friendliness. The platform is built using TypeScript and JavaScript. TypeScript enhances code reliability and maintainability through static typing and advanced IDE support, while JavaScript powers the platform's dynamic content generation and interactive features. The platform leverages several frameworks and libraries to ensure efficient functionality and a seamless user experience. Next.js provides server-side rendering and static site generation for fast, SEO-optimized pages and efficient routing, while React enables dynamic and reusable UI components for a seamless UX. On the backend, Express.js handles RESTful APIs and content delivery on the backend with Mongoose managing MongoDB operations efficiently. Tailwind CSS enables rapid and consistent styling of the user interface, aligning with the platform's bold visual identity. The platform integrates Google Trends API to fetch real-time and daily trending topics that form the basis of blog content. GPT-4o-Mini, an AI-powered content generator, is used to create blogs based on trending topics, ensuring relevance and engagement. The platform utilizes various tools and software to support development, testing, and deployment. Visual Studio, Git, and GitHub support efficient coding, collaboration, and project management. Node.js provides a scalable, event-driven runtime for handling asynchronous operations and API integrations. MongoDB stores blog posts, trends, and metadata, enabling efficient querying and data management. Postman is used for APIs testing and Vercel hosts the frontend with serverless infrastructure for high performance.

## 2.8 Implementation Decisions

The implementation of the platform involved numerous decisions to ensure the platform's functionality, efficiency, and alignment with its goals. This section outlines the program's logic and workflow, detailing the key components, their roles, and the reasons behind design choices. It was built using Next.js and React to deliver a fast and responsive user interface. Tailwind CSS was integrated for consistent and customizable

styling throughout the site. Dynamic routes enable the rendering of category pages, while a search bar allows the users to discover content based on keywords. Performance is further optimized using lazy loading and dynamic imports, which help reduce initial load times and enhance the overall user experience. The backend of the platform was implemented using Node.js with Express.js for creating RESTful APIs that handle data fetching, processing, and delivery. Integration with the Google Trends API allows the system to retrieve trending topics in real-time. Blog content is generated using GPT-4o-Mini, ensuring the posts are relevant and engaging. MongoDB is employed as the database for storing trends, generated blogs, and metadata. The platform incorporates NLP algorithms such as cosine similarity, Levenshtein distance, and Jaccard similarity to prevent duplicate or overly similar blogs from being published. Automation within the platform is managed through cron jobs that schedule tasks for trend fetching, blog generation, and content publishing at regular intervals. System activities are logged and monitored using Vercel, ensuring system reliability and facilitate debugging. The system periodically retrieves trending topics from the Google Trends API using a cron job. Trends are filtered based on predefined categories and validated to ensure alignment with the platform's tone. Relevant trends are saved in the MongoDB database for tracking and reference. For each validated trend, GPT-4o-Mini generates engaging blog content, structured into headings, subheadings, and paragraphs to enhance readability. Newly generated blogs are compared with the last 20 published posts using NLP algorithm. Contents exceeding the similarity threshold are flagged and excluded from publication. Unique blogs are categorized and published to their respective sections on the frontend. The system generates metadata and structured data to improve SEO performance. Users access the content through a responsive and visually engaging interface. They can browse categorized blogs, use the search functionality, or explore related content suggested dynamically.

Next is an explanation of why these decisions were made:

- **Frontend and Styling:** Next.js was chosen for its SEO-friendly features, server-side rendering, and support for dynamic routing, while Tailwind CSS simplifies styling and ensures consistency with the platform's bold design.
- **Node.js and Express.js:** Offers scalability and efficiency in handling concurrent requests, critical for API-based operations.
- **Content Generation:** The Google Trends API provides real-time topics, and GPT-4o-Mini delivers high-quality, AI-generated content, reducing the need for manual content creation.
- **Content Quality and Management:** Duplicate Detection ensures content originality and prevents redundancy, maintaining the platform's credibility.
- **Automation and Reliability:** Cron jobs automate trend fetching and blog publishing while error logging and monitoring quickly identifies and addresses issues to enhance system reliability.

## 2.9 User Instructions

To evaluate the usability and user experience of the Radiorogue platform, participants will complete the following tasks during the usability testing:

- **Access the Homepage:** Open the platform in a web browser. Explore the homepage to identify the available categories.
- **Search for a Blog:** Use the search bar to look for a specific blog using a keyword or phrase. Review the search results and select a blog to read.

- Interact with a Blog: Like a blog post to demonstrate engagement with the content. Add a comment in the comments section to provide feedback or thoughts.
- Explore Related Content: Navigate to the bottom of a blog post to view the related blogs section. Click on a related blog to continue reading similar content.

These tasks are designed to simulate common user interactions on the platform, assessing its usability, responsiveness, and overall effectiveness in delivering content and facilitating engagement.

To access the Radorouge platform, users can navigate to the homepage in a web browser [1]. The homepage displays featured blogs and categorizes sections (Figure 1). Users can further explore specific topics by clicking on a category, which opens a dedicated page listing with their titles, summaries, and publication dates. To search for specific blogs, users can enter keywords or phrases in the search bar at the top of the page. After typing the desired items, pressing Enter or clicking the “Search” icon displays a list of relevant results for the users to explore. To read a blog, participants can simply click on a post from the homepage, search results or the category page. Each blog displays the title, main content, and any related blogs. To explore additional content, users can scroll to the bottom of the page on a mobile or use the right-hand sidebar to view related posts, clicking on any suggested blogs to continue reading. Users can engage with blogs in several ways. To show appreciation, they can click the “Like” button, located below the content, which immediately updates the like count to reflect their action (Figure 2). Additionally, the users can contribute their thought or feedback by scrolling down to the comment section, entering a comment in the provided textbox and clicking “Post Comment” button. By following these steps, users can fully engage with the Radorouge platform, explore trending blogs, and actively interact with posts through likes and comments. This intuitive design ensures a user-friendly and engaging experience.

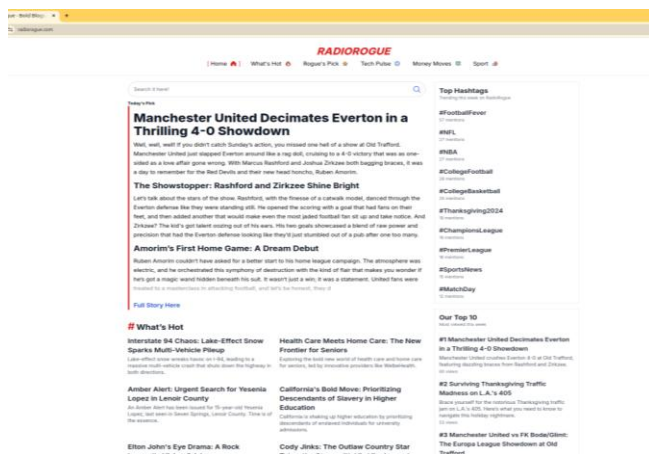


Figure 1: Radorouge's homepage.

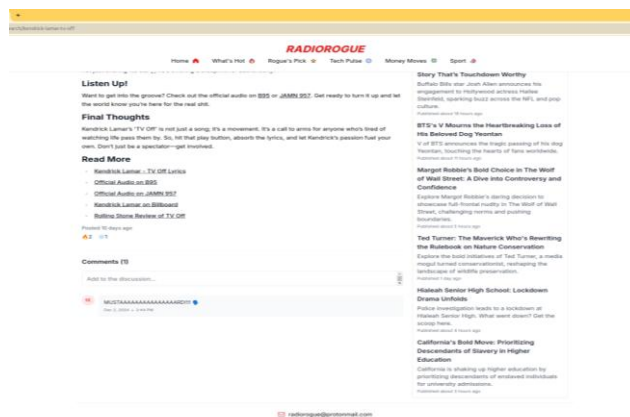


Figure 2: "Like" button and updated like count.

## 2.10 Evaluation Methods

To evaluate the Radorouge platform, two evaluation methods are chosen: Usability Testing and Survey Feedback. Usability testing involves observing real users as they interact with the platform to assess how easily they can navigate and use its features. This method is chosen because it allows direct observation of user behavior, identifies usability issues, and provides actionable insights for improving the platform's design and functionality. Survey feedback is collected using a structured questionnaire, allowing users to provide subjective evaluations of their experience. This method is chosen because it captures user satisfaction, perceptions, and suggestions, which complement the findings from usability testing and provide a broader understanding of user needs. The Usability Testing Form is used to guide participants through specific tasks, such as navigating categories, searching for blogs, liking posts, and adding comments. Observations of task completion rates and ease of use help identify usability issues and areas for improvement. The Survey Feedback Form collects user opinions and experiences after interacting with the platform. Participants rate their satisfaction with visual design, navigation, search accuracy, content relevance, interactivity, and performance. Open-ended questions allow users to suggest features and report issues, providing valuable insights for further enhancement.

Participants include individuals representative of the platform's target audience, such as casual readers and those interested in trending topics. Testing will be conducted in a controlled environment, ensuring all participants have access to the platform on similar devices and browsers to maintain consistency. Each participant will be briefed about the tasks and the purpose of the evaluation before beginning. The data collected from the forms will be analyzed to identify trends, strengths, and areas for improvement. Quantitative ratings will be averaged to assess overall user satisfaction, while qualitative responses will be reviewed for actionable insights. This combined approach ensures that the evaluation captures both objective performance metrics and subjective user perceptions.

## 2.11 Issues

The development and operation of the platform involve practical and ethical considerations to ensure smooth user experience and operational efficiency. Practical challenges include handling growing traffic, frequent Google Trends API calls, and content generation demands, which can be mitigated with scalable cloud infrastructure, caching, and load balancing. API outages can be addressed with local trend caching and alternative data sources. Duplicate content can be reduced using stricter NLP similarity thresholds and model refinements. Frontend delays from large

sitemaps were resolved by dynamic, incremental indexing. Consistent cross-browser and device functionality requires automated and manual testing.

For ethical issues, using AI-generated content could raise questions about transparency and the authenticity of the blogs. These concerns can be addressed by clearly disclose that blogs are AI-generated in a footer or about section, ensuring transparency and building trust with users. The platform ensures a safe and reliable user experience, by using automated moderation tools to filter inappropriate or harmful comments and provides a reporting mechanisms for users to flag issues. AI-generated content is monitored for bias, accuracy, and relevance, while diverse prompts and data sources help maintain content quality and trustworthiness. Collecting user interactions raises privacy concerns. These can be addressed by adhering to data protection regulations by anonymizing data and providing clear privacy policies while also ensuring users to opt out of data collection if desired. AI-generated content might unintentionally resemble existing content, raising concerns about plagiarism. It is important to use plagiarism detection tools to compare generated blogs with existing online content and refine prompts to avoid potential overlaps.

## 2.12 Evaluation and Subject Testing

To evaluate the Radiorogue platform, at least 10 individuals were asked to test the system and provide feedback through structured evaluation forms. Each participant was provided with a User Manual, a Consent Form, and an Evaluation Form/Questionnaire to ensure a comprehensive and ethical evaluation process.

Each participant received a printed or digital copy of the User Manual, providing a step-by-step guide explaining how to use the platform, including navigating categories, searching for blogs, liking posts, and adding comments. They also received a Consent Form to ensure voluntary participation and protect their rights and confidentiality, along with an Evaluation Form/Questionnaire to collect feedback on usability, user experience, and any issues encountered during testing. Testing was conducted in a distraction-free environment with access to laptops or mobile devices. Participants followed the instructions in the User Manual to explore the platform and complete assigned tasks. After testing, participants filled out the evaluation form to provide feedback on their experience, including ratings, comments, and suggestions for improvement. For ethical considerations and data collection, all participants were required to sign the consent form, acknowledging their voluntary participation and understanding that their feedback would be used for research purposes. To maintain confidentiality, all data was anonymized, ensuring that no personally identifiable information was shared or recorded. Data Collection involved feedback from the usability testing and survey feedback forms was compiled and analyzed to assess user satisfaction, identify strengths, and pinpoint areas for improvement.

## 3. RESULTS

This section presents the evaluation, based on usability testing and surveys providing analyzed insights into the platform’s performance, usability, and overall user experience.

The usability testing focused on participants completing specific tasks, such as accessing the homepage, searching for blogs, liking posts, adding comments, and exploring related blogs. Table 1 demonstrates the success rate for the usability testing metrics used.

**Table 1: Usability Testing Metrics and Success Rates**

| Metric                                 | Value |
|----------------------------------------|-------|
| Access Homepage Success Rate           | 100%  |
| Search Blog Success Rate               | 90%   |
| Like Blog and Add Comment Success Rate | 100%  |
| Explore Related Blogs Success Rate     | 80%   |

Key Observations:

- Participants successfully accessed the homepage and liked blog posts, indicating ease of basic interactions.
- The platform's speed and responsiveness received the highest rating (5.0), reflecting its performance optimization.

The survey provided quantitative ratings and qualitative insights into user experience. In Table 2 there are the averaged ratings:

**Table 2: Survey Feedback Metrics and User Ratings**

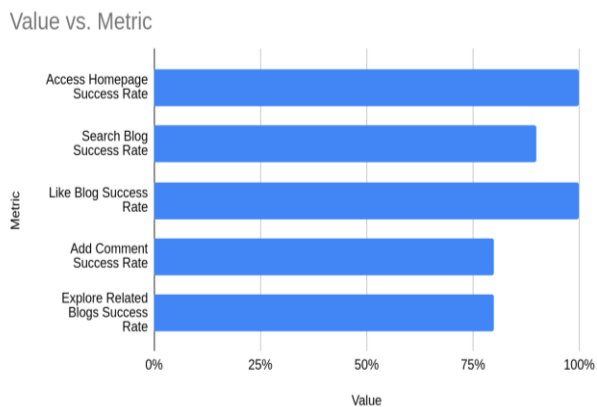
| Metric                               | Value |
|--------------------------------------|-------|
| Average Visual Appeal (1-5)          | 4.5   |
| Average Ease of Navigation (1-5)     | 4.7   |
| Average Search Accuracy (1-5)        | 5     |
| Average Speed and Transitions (1-5)  | 5     |
| Average Intention to Use Again (1-5) | 4.9   |

Key Observations:

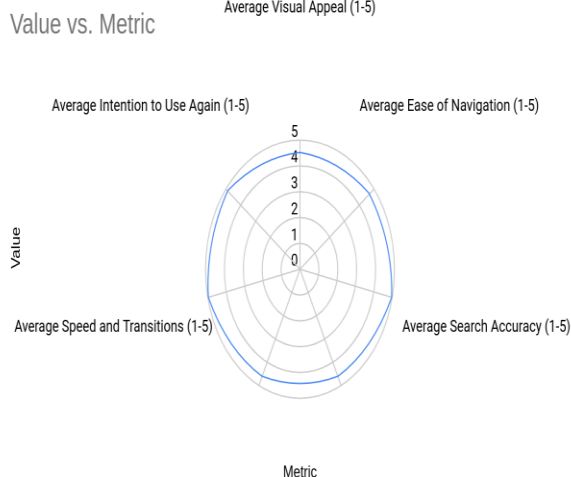
- Search functionality received the highest rating (5.0), reflecting its accuracy and efficiency.
- Visual appeal and navigation were rated highly, with users appreciating the clean and bold design.

Participants provided open-ended responses regarding the platform’s strengths and areas for improvement. Users consistently praised the platform for its ease of navigation, clean and simple design, and engaging, up-to-date content. Several suggestions were offered to enhance the user experience, including adding more categories to broaden content variety, introducing features like images in blogs, the ability to undo likes/dislikes, and better content headings.

To provide a visual summary of the data, bar charts or graphs can be created to illustrate success rates, average ratings, and areas for improvement. Figure 3 shows success rates for usability tasks. Figure 4 compares average ratings across survey feedback metrics. The results indicate that the Radiorogue platform performs well in terms of usability, speed, and user experience, with room for improvement in specific features like comment functionality and category expansion. The high ratings for search accuracy, speed, and overall engagement validate the system’s design and implementation decisions. The qualitative feedback offers actionable insights for refining and enhancing the platform further.



**Figure 3:** Bar chart showing success rates for usability tasks



**Figure 4:** Radar chart comparing average ratings across survey feedback metrics

#### 4. ANALYSIS AND COMPARISON

Radiorogue generates real-time AI content using Google Trends, emphasizing a user-centered interface guided by HCI principles. Iterative prototyping and usability testing improve navigation, content discoverability, and reduce cognitive load, enabling efficient exploration of trending blogs. The platform ensures rapid content delivery, scalability, and cost-effectiveness. Limitations include minimal personalization, lack of multimodal content, and limited multilingual support. Future enhancements could incorporate adaptive interfaces, AI-driven personalization, and longitudinal studies to evaluate sustained engagement and overall effectiveness.

When analyzing the performance of Radiorogue Platform, the following is observed:

- **Real-Time Content Generation:** Radiorogue effectively produces AI-generated content in real time by leveraging Google Trends data. This allows users to access trending topics as they emerge, supporting timely engagement with relevant content.
- **Responsiveness and Scalability:** The platform is designed for fast response times and can scale efficiently under varying user loads, ensuring smooth browsing even during peak demand.
- **Cost-Effectiveness:** By optimizing computational resources and AI workflows, Radiorogue maintains high performance without incurring excessive operational costs.
- **Usability Impact on Performance:** HCI-driven design choices, such as simplified navigation and clear content

organization, reduce cognitive load, allowing users to find and consume content quickly, effectively enhancing perceived system performance.

- **Limitations and Future Considerations:** Performance under extreme traffic or heavy concurrent AI requests is not fully evaluated. Incorporating adaptive caching, predictive content preloading, or load balancing could further improve scalability and real-time responsiveness.

Table 3 compares Radiorogue platform with similar platforms. Radiorogue distinguishes itself by integrating real-time AI-generated content with Google Trends data, offering a user-centered interface designed around Human-Computer Interaction (HCI) principles. This approach ensures that users can effortlessly explore trending topics through intuitive navigation and reduced cognitive load. Some of its key features include Real-Time Content Generation: Utilizes Google Trends to produce AI-generated content that aligns with current search interests. User-Centered Design: Emphasizes simplified navigation and content discoverability to enhance user experience. Scalability and Cost-Effectiveness: Optimized for performance, ensuring responsive delivery even during peak usage.

**Table 3: Comparison with Other Platforms**

| Platform                            | Real-Time Trend Integration | Multimodal Content | Personalization | Scalability | HCI Design Focus |
|-------------------------------------|-----------------------------|--------------------|-----------------|-------------|------------------|
| <b>Radiorogue</b>                   | Yes                         | Text-based         | Minimal         | High        | Strong           |
| <b>HubSpot AI Blog Writerv [22]</b> | No                          | Text-based         | Moderate        | High        | Moderate         |
| <b>Gravity Write [23]</b>           | No                          | Text-based         | High            | High        | Moderate         |
| <b>UpGrow th [24]</b>               | Yes                         | Text-based         | High            | High        | Moderate         |
| <b>RightBlogger [25]</b>            | No                          | Text-based         | High            | High        | Low              |

#### 5. CONCLUSION

The evaluation of the Radiorogue [1] platform demonstrates its effectiveness in delivering an engaging and user-friendly experience for its target audience. By leveraging real-time data and AI-powered content generation, the system successfully provides fresh and relevant blogs across various categories. The usability testing and survey feedback highlight several key strengths, including the platform's intuitive navigation, fast performance, and visually appealing design. However, the evaluation also identifies areas for improvement, such as expanding content categories, introducing additional interactive features, and enhancing comment functionality. Addressing these suggestions will further enhance user engagement and satisfaction.

Future work could focus on personalizing AI-generated content, integrating multimodal formats like audio or visuals, and developing adaptive interfaces to further reduce cognitive load. Expanding multilingual support and conducting longitudinal user studies would also help evaluate engagement, real-time performance, and overall effectiveness across diverse user groups.

#### 6. REFERENCES

- [1] <https://www.Radiorogue.com> accessed October 2024

- [2] Sharma, V., & Tiwari, A. K. (2021). A Study on User Interface and User Experience Designs and its Tools. *World Journal of Research and Review*, 12(6), 41-44.
- [3] Chen, L. C. (2020). A Study of Optimizing Search Engine Results Through User Interaction. *IEEE Access*, 8, 79089-79098. <https://doi.org/10.1109/ACCESS.2020.2990972>
- [4] Wittenberg, C., Epstein, Z., Berinsky, A. J., & Rand, D. G. (2023). Labeling AI-Generated Content: Promises, Perils, and Future Directions. *MIT Artificial Intelligence Policy Forum*.
- [5] Ziakis, C., & Vlachopoulou, M. (2024). Artificial Intelligence's Revolutionary Role in Search Engine Optimization. In A. Kavoura et al. (Eds.), *Strategic Innovative Marketing and Tourism*. Springer Proceedings in Business and Economics. [https://doi.org/10.1007/978-3-031-51038-0\\_43](https://doi.org/10.1007/978-3-031-51038-0_43)
- [6] Lund, B. D., Wang, T., Mannuru, N. R., Nie, B., Shimray, S., & Wang, Z. (2023). ChatGPT and a New Academic Reality: AI-Written Research Papers and the Ethics of the Large Language Models in Scholarly Publishing. *Journal of the Association for Information Science and Technology*.
- [7] Aishwarya C., Venkatesan M., & Prabhavathy P. (2023). Effects of User Behavior in the Propagation of Fake News on Social Media. In 2023 3rd International Conference on Smart Generation Computing, Communication and Networking (SMART GENCON) (pp. 1-7). IEEE. <https://doi.org/10.1109/SMARTGENCON60755.2023.10441909>
- [8] Kowalczyk, K., & Szandala, T. (2024). Enhancing SEO in Single-Page Web Applications in Contrast With Multi-Page Applications. *IEEE Access*, 12, 11597-11614. <https://doi.org/10.1109/ACCESS.2024.3355740>
- [9] Fergusson, G., Fitzgerald, C., Frascella, C., Iorio, M., McBrien, T., Schroeder, C., Winters, B., & Zhou, E. (2023). Generative AI's Impact & Paths Forward. *Electronic Privacy Information Center (EPIC)*.
- [10] Gunasekaran, K. P. (2023). Exploring Sentiment Analysis Techniques in Natural Language Processing: A Comprehensive Review. *arXiv:2305.14842 [cs.CL]*. <https://doi.org/10.48550/arXiv.2305.14842>
- [11] Rayhan, A. (2024). Exploring the Power of Google Trends: Applications, Limitations, and Future Directions. *CBECL*. <https://doi.org/10.13140/RG.2.2.26330.76487>
- [12] Choi, H., & Varian, H. (2009). Predicting the Present with Google Trends. *Google Inc.*.
- [13] Werzansky-Orland, Y. (2024). AI-generated content and the question of copyright. *International Journal of Business Research*, 5, 2-20.
- [14] Hristov, K. (2017). Artificial Intelligence and the Copyright Dilemma. *IDEA - The Journal of the Franklin Pierce Center for Intellectual Property*, 57, 431-454.
- [15] Singh, S. K., Singh, A., Tiwari, A., Kumar, M., & Chauhan, C. (2023). Plagiarism Checker using tf-idf, cosine similarity and jaccard similarity. *International Journal of Novel Research and Development*, 8(5), 667-672.
- [16] O'Brien, H. L. (2011). Exploring user engagement in online news interactions. *Proceedings of the American Society for Information Science and Technology*, 48(1), 1-10. <https://doi.org/10.1002/meet.2011.14504801088>
- [17] Devarapalli, C. A. (2023). Search Engine Optimization (SEO): Elevating Frontend Code for Better Rankings. *International Journal of Science and Research*, 12(9).
- [18] Sindhura, K. (2023). Sentiment Analysis using Natural Language Processing and Machine Learning. *Journal of Data Acquisition and Processing*, 38(2), 520. <https://doi.org/10.5281/zenodo.7766376>
- [19] Mishra, A. R., Panchal, V. K., & Kumar, P. (2020). Similarity Search based on Text Embedding Model for detection of Near Duplicates. *International Journal of Grid and Distributed Computing*, 13(2), 1871-1881.
- [20] Xu, W., Dainoff, M. J., Ge, L., & Gao, Z. (2023). Transitioning to Human Interaction with AI Systems: New Challenges and Opportunities for HCI Professionals to Enable Human-Centered AI. *International Journal of Human-Computer Interaction*, 39(3), 494-518. <https://doi.org/10.1080/10447318.2022.2041900>
- [21] Giummolè, F., Orlando, S., & Tolomei, G. (2013). Trending Topics on Twitter Improve the Prediction of Google Hot Queries. In 2013 International Conference on Social Computing (pp. 39-44). IEEE. <https://doi.org/10.1109/SocialCom.2013.12>
- [22] HubSpot Marketing Hub accessed October 2025
- [23] AI Content Writer for Blogs, SEO & Copywriting | GravityWrite accessed October 25
- [24] upGrowth: AI-Powered Digital Marketing & SEO Solutions accessed October 25.
- [25] RightBlogger: Automated Blogging Tools for SEO & LLM Traffic accessed October 25.