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QUALITY POINTPAL: AI-ENHANCED REDEFINITION OF SOCIAL NETWORKING FOR SUSTAINABLE DIGITAL USAGE AND GENUINE HUMAN CONNECTIONS

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Research Paper

Abstract: The increasing prevalence of digital interactions in our lives has raised concerns regarding social withdrawal, exemplified by the hikikomori phenomenon. To combat this issue, we introduce PointPal, an intelligent social platform aimed at bridging the gap between online engagement and real-world interactions, with a particular focus on addressing challenges associated with excessive internet use and hikikomori tendencies. PointPal provides a sophisticated digital environment where users can securely connect based on mutual interests, facilitating a seamless transition from virtual conversations to in-person meetings. Incorporating artificial intelligence voice recognition technology enhances accessibility and safety, while a personal safety button addresses concerns about meeting unfamiliar individuals online, promoting secure navigation of the digital landscape and encouraging more sustainable usage patterns. Through a comprehensive survey conducted among a diverse group in the UAE, including young adults, residents, tourists, and travellers, we identified key features deemed essential for facilitating offline meetups. The Interactive Map emerged as the top priority, followed by AI Chatbot Assistance, emphasizing the importance of user support, and User Meetup Reviews, highlighting the value of peer feedback. Conversely, Photo & Media Sharing was considered less vital. By integrating an Interactive Map and AI Chatbot Assistance, PointPal endeavours to revolutionize the social application industry, substantiating its potential value. Built on a microservices architecture, the system ensures modularity and scalability, comprising essential services such as User Management, Interest Management, Meeting Management, Chat, Moderation, and AI

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Quality PointPal: AI-Enhanced Redefinition of Social Networking for Sustainable Digital Usage and Genuine Human Connections

Chatbot microservices. The incorporation of AI sound recognition provides users with a natural and intuitive means of interaction, distinguishing PointPal by fostering meaningful connections and guaranteeing socially secure internet navigation, thereby surpassing existing applications.

1. Introduction

In an era dominated by digital interactions, the growing issue of social withdrawal, commonly referred to as hikikomori (Stip et al., 2016) , underscores the pressing need for authentic human connections. Individuals grappling with this condition often retreat from society for prolonged periods, sometimes lasting months or even years. The severity of the situation is evident in cases where affected individuals confine themselves to their rooms, avoiding sunlight and meaningful human interactions. The pervasive use of online platforms and social media can act as both a catalyst and a sustaining force for hikikomori, highlighting the internet's role as a major contributing factor. The gravity of the problem is undeniable—children and adolescents, captivated by digital media, spend an alarming 7.5 hours each day engaged in internet activities (J Ryan Fuller, 2023). Increased internet usage exacerbates issues related to addiction and hikikomori, with individuals who spend more time online facing a heightened risk of developing this condition (Tateno et al., 2019).

Numerous social platforms worldwide have endeavoured to bridge the divide between virtual and real-world interactions in order to fulfil social needs. For example, researchers have scrutinized the dynamics within the senior-focused Chinese online community known as OldKids (Jiang et al., 2022). This community serves as a conduit for elderly Chinese internet users to engage in discourse, events, and interactions, with the overarching goal of amalgamating online and offline interactions. OldKids facilitates the transcendence of geographical barriers, enabling older members to cultivate deeper offline connections with online acquaintances who share similar backgrounds and interests. Intriguingly, the efficacy of OldKids in bridging this dichotomy is attributed not to distinct technological functionalities but rather to the sense of camaraderie cultivated through online engagement, which manifests in offline relationships and face-to-face encounters. Furthermore, scholarly inquiries consistently underscore the importance of shared interests and backgrounds in both online and offline social connections. The concept of homophily, wherein individuals tend to associate with those resembling them, is well-documented in social networks (McPherson et al., 2001), evident in diverse relationships including marriage, friendship, and professional affiliations. Research on homophily within online interactions has revealed consistent patterns across various virtual platforms [10], with additional empirical support from investigations exploring its manifestation in specific domains such as musical preferences (Zhou et al., 2017).

Additional social platforms have endeavoured to facilitate the integration of online and offline interactions. For instance, in Zuo et al. (2012), the author explored the development of the "Find & Connect" mobile platform, which was presented at the UbiComp 2011 conference. This platform aimed to seamlessly merge online and

offline interactions within conference environments. It incorporated elements of both proximity and homophily within conference settings, leveraging Radio Frequency Identification (RFID) technology to monitor users' indoor locations and thereby calculate physical distances. To determine individuals' real-time positions within conference rooms, the platform utilized the LANDMARC algorithm, which was supported by RFID readers equipped with reference tags. Additionally, the platform integrated a recommendation system designed to connect conference attendees based on shared interests identified through previous research endeavours.

PointPal, our proposed solution, addresses this pervasive challenge by bridging the gap between online connections and real-world interactions. PointPal is a smart mobile application designed to facilitate real-world interactions between individuals with shared interests. Through PointPal, users can create accounts, select their interests, schedule and attend meetups, and participate in community chats. The application's moderators play a crucial role in ensuring user safety by verifying identification, handling reported cases, and moderating community interactions. PointPal aims to provide a secure and enjoyable environment for users to connect with like-minded individuals based on mutual interests. Our platform surpasses conventional online interactions by fostering authentic connections in the physical world. PointPal incorporates advanced features such as artificial intelligence voice recognition and a personal safety button to enhance user experience and safety. A survey conducted in the UAE among young adults, residents, tourists, and travellers identified key features for facilitating offline meetups. The Interactive Map was the top choice, followed by AI Chatbot Assistance and User Meetup Reviews, highlighting the importance of peer feedback and support. Built on a microservices architecture, PointPal ensures modularity and scalability, integrating services such as User Management, Interest Management, Meeting Management, Chat, Moderation, and AI Chatbot microservices. This comprehensive approach positions PointPal as a robust solution for fostering meaningful connections and promoting socially secure internet navigation, excelling beyond existing applications.

PointPal aims to introduce a ground-breaking social mobile application designed to address prevalent issues in online community platforms. Its distinctive features include: (i) Enhanced security and accessibility through advanced artificial intelligence (AI) for voice recognition; (ii) Prioritization of user safety with the implementation of a Personal Safety Button, which is designed to ensure secure in-person interactions and address concerns about meeting strangers; and (iii) Utilization of a centralized database for efficient information storage.

This paper makes four significant contributions:

1. It introduces a smart social platform designed to address the pressing issue of social withdrawal, particularly the hikikomori phenomenon resulting from extensive digital interactions.
2. It serves as a bridge between online engagement and real-world interactions, thereby promoting genuine human connections.
3. It establishes a safer and more interactive digital space for users, mitigating the challenges associated with prolonged internet usage.

4. It encourages meaningful connections by facilitating user interactions based on shared interests, coordinating real-world meetups, and supporting community chats.

By connecting users based on common interests and prioritizing security for meaningful in-person interactions, PointPal aims to revolutionize social networking. The paper is organized into key sections: Section 2 provides a literature review; Section 3 details the rigorous requirements engineering techniques employed; Section 4 outlines PointPal's architecture, application features, and specific algorithms; Section 5 discusses the development tools and languages used, the application scenario, and the system's impacts and benefits; Section 6 presents the evaluation results of the system, including a comparison with the initial objectives; and the final section offers a concise conclusion, summarizing the findings and outlining future directions for PointPal's social networking paradigm.

2. Related Work

It has been noted that an overreliance on digital platforms such as Instagram, Discord, and various online chat rooms for fulfilling social needs presents several challenges. Interactions within these platforms primarily occur within the confines of screens, raising concerns about the authenticity and depth of online connections. Researchers highlighted in (Kim et al., 2012) have brought attention to the issue of inadequate formation of genuine and meaningful virtual relationships, which may contribute to feelings of social exclusion. Furthermore, the scholar cited in Papacharissi (2005) emphasized the blurred distinction between real-world and virtual interactions, as individuals often blend both realms to strengthen social ties. Expanding on this discourse, the author in Xie (2008) observed the interplay between online and offline social relationships, emphasizing the necessity of a balanced integration of both modes for fostering meaningful connections. Transitioning to the impact of technology on face-to-face interactions, the scholar in (Foster, 2022) explored the influence of technology, particularly mobile devices, on interpersonal exchanges. Contrary to prevailing negative perceptions, the author argued for the potential of technology to enhance in-person engagements, highlighting the importance of shared attention and mutual experiences in fostering meaningful interactions.

Moreover, through the proposed incorporation of an AI chatbot service within PointPal, researchers in (Jiang et al., 2022) have provided insights into the potential impact of chatbot interactions on consumer behaviour and business outcomes. Grounded in social exchange theory and resource exchange theory, their study examined how users' interactions with chatbot services affect subsequent engagement on social media platforms. Utilizing structural equation modelling (SEM) with a cohort of 965 customers in the United States, their investigation established a mediation model. The results underscored the significance of chatbot responsiveness and conversational tone in shaping customer satisfaction. Furthermore, the study revealed associations between customer satisfaction with chatbots, social media engagement levels, willingness to pay premium prices, and purchase intentions.

Recent investigations, as documented in (Hussien, 2022; Ricken et al., 2017), have scrutinized recent endeavours and prominent applications that delve into the design of event-based social networking (EBSN) platforms aimed at nurturing communities within specialized interest groups. One notable example is Meetup, a cross-platform social media established in 2001 with the objective of facilitating localized face-to-face social engagements (Ricken et al., 2017). Boasting a user base of 24 million individuals and encompassing 230,000 groups that organize 560,000 monthly meetups as of 2015, Meetup stands as the foremost EBSN platform in terms of scale and reach. Users utilize the platform to create and coordinate social gatherings, predominantly conducted in person. Functioning on a dual-user model, organizers, who are required to pay an annual subscription fee of $80, assume the role of establishing and managing interest groups (e.g., women bike riders, birdwatchers), whereas followers can join existing groups at no cost, primarily relying on organizers' adeptness at hosting enticing events. Additionally, organizers shoulder the responsibility of event inception and promotion, harnessing Meetup's keyword-based advertising features to attract participants. Meetup employs a targeted advertising approach, scanning user profiles for individuals sharing similar interests as delineated by keywords provided by organizers. The findings of Vera Cruz et al. (2024) align with the Interaction of Person-Affect-Cognition-Execution model, suggesting that PTU is influenced by individual experiences on the app interacting with dispositional and situational factors. However, issues such as lack of self-esteem, negative mood, and loneliness may not be effectively addressed by current online dating services, emphasizing the need for digital interventions to identify and tackle potential problems associated with dating app usage.

Alternatively, the author of Chung et al. (2017) conducted an examination of the privacy and security ramifications inherent within the Meetup platform, uncovering a spectrum of associated risks. This investigation further unveils the capacity for sensitive personal information to be accurately inferred through the application of machine learning techniques, achieving a commendable accuracy rate of 93%. Notably, this inference is facilitated through the analysis of group affiliations, interests, lexical patterns, and networking behaviours. The extensive data aggregation undertaken by Meetup raises pertinent concerns regarding inadvertent privacy breaches related to users' intimate interests. Moreover, the discourse delineated in the work underscores the phenomenon of cross-service privacy infringements, wherein major social networking platforms may inadvertently expose personal data upon account linkage. A comparable platform scrutinized in (Olson & Neal, 2015) is Reddit, which, albeit not primarily geared towards facilitating online-to-offline (O2O) interactions, engenders a milieu conducive to interest-driven online engagements. This is predominantly facilitated through its subreddit framework, wherein individuals are afforded the opportunity to subscribe to and engage with topic-specific communities. Within these subreddits, users can interact with like-minded individuals, share content, and participate in discussions pertinent to their interests. For instance, the article elucidates instances wherein users partake in discussions encompassing diverse topics such as sports, programming, electronic music, fitness, among others, within dedicated subreddit communities.

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On a contrasting note, Facebook Events, as discussed in Olson & Neal 2013, emerges as a prominent platform catering to the creation, dissemination, and exploration of local events. This functionality relies heavily on Facebook's expansive user base to instigate community meetups. Thus, in Zhang et al. (2011), the authors explore how Facebook merges online and offline community interactions through "proximal communities," leveraging features such as Facebook Groups and Events. These functionalities enable users to create, join, or engage with groups or events based on shared interests, hobbies, or social gatherings, fostering engagement in offline communities. Additionally, Facebook utilizes status updates, wall posts, and photo sharing to extend the reach of real-life events online, attracting a broader audience. However, this integration raises privacy and safety concerns, including the exposure of personal information and unintentional location disclosure. To address these issues, Facebook Events offers privacy controls for managing visibility, geolocation features, and content moderation tools to ensure user safety and protection.

Additionally, in Chin et al. (2013), researchers explored Eventbrite, a social platform designed to bridge the gap between online event promotion and offline participation. Eventbrite serves as a comprehensive event management and ticketing platform, empowering organizers to efficiently coordinate in-person gatherings. It facilitates the creation, promotion, and ticket sales for diverse events like concerts, workshops, conferences, and community meetups, fostering connections among individuals interested in offline activities. Notably, Eventbrite offers features such as easy event creation, ticketing services, promotion tools, and event discovery options. Furthermore, Farrelly (2014) discusses Four square's utilization of technology to integrate online and offline realms. Foursquare, an early global location-based service, combines locative technologies with social media functionalities. Users engage with real-world activities by contributing reviews, photos, and listings, enhancing local engagement. Leveraging location-based data, Foursquare provides users with tailored information about nearby venues, facilitating local discovery. Additionally, it enables participatory mapping, allowing users to contribute diverse place data, including new locations. Through features like check-ins, users share aspects of places with their social network, serving as reminders of unique qualities associated with these places.

The authors in Paul and Ahmed (2024) sheds light on the nuanced dynamics underlying users' perceptions of AI-driven matchmaking algorithms in online dating contexts. Findings highlight the significance of fairness perceptions and AI social presence in shaping users' confidence in algorithm efficacy. Moreover, users' prior success in online dating initiation reinforces their trust in matchmaking algorithms. Understanding these factors is essential for optimizing algorithm design and enhancing user satisfaction in online dating platforms. In Hsiao and Dillahunt (2017), Tinder, a prominent platform, is examined for its role in facilitating online-to-offline (O2O) interactions through People-Nearby Applications (PNAs). Notable features include its matchmaking algorithm, which suggests nearby user profiles based on location data, and cross-platform integration allowing linkage with social media accounts. PNAs incorporate built-in messenger features supporting post face-to-face communication. Users, exemplified by P14, favour PNAs retaining chat history, a feature typically accessible through paid memberships, aiding in ongoing communication. Similarly, Barros et al. (2022) analyses Bumble, primarily a dating app, utilizing interaction methods like swiping, clicking, and messaging. Leveraging

Location-Based Services (LBS), Bumble requires active location services for content loading. Despite privacy precautions, user identification and message exchange data remain accessible.

The study outlines a comprehensive security analysis methodology covering virtual and physical device testing, data extraction, privacy and security concerns, and network traffic analysis. Identified issues encompass the collection and processing of user data for targeted advertising, along with security vulnerabilities like Man-In-The-Middle attacks and unauthorized data access. These revelations underscore concerns regarding customer data protection and integrity maintenance. Table 1 summarizes the limitations of the social platforms examined in this study.

Table 1. List of Currently Existing Applications with Their Limitations

| Application Name	Limiting Features
OldKids (Xie, 2008)	Challenges ensuring user privacy in the context of voice chat rooms, online forums, and instant messaging
Find & Connect (Zuo et al., 2012)	Potential privacy concerns related to the use of RFID technology to track users' locations during conferences, raising issues of consent and data protection
Meetup (Ricken et al., 2017)	Possibility of limited participation or engagement in face-to-face meetups, particularly in areas with fewer users or niche interests
Reddit (Olson & Neal, 2015)	Facilitates interest-based discussions but does not provide options for face-to-face interaction
Facebook Events (Zhang et al., 2011)	Dependence on active user participation and engagement, which may limit the success of proposed activities if there is low user interest or involvement
Eventbrite (Chin et al., 2013)	Reliance on email notifications and browsing rather than real-time engagement, limiting the platform's effectiveness in capturing user interactions and attendance patterns
Foursquare (Farrelly, 2014)	Contributes to feelings of alienation from physical surroundings, leading to diminished engagement with offline environments
Tinder (Hsiao & Dillahunt, 2017)	Limited features for reducing uncertainty and establishing trust, such as the absence of cross-platform integration and user authorization
Bumble (Barros et al., 2022)	Restrictions of the free tier offering a limited number of profiles a user can view per day as well as collecting sensitive user information

3. Methodology

3.1 Data Collection

To comprehensively gather and analyse our requirements, we conducted a survey among a diverse cohort of individuals in the UAE, encompassing young adults, residents, tourists, and travellers. This inclusive approach was essential to ensure a nuanced understanding of varied perspectives, a critical aspect considering our application's objective of addressing multifaceted issues, including the challenges faced by individuals in seeking social interactions and relying on social apps to fulfil their needs. Employing the Big Five personality test, participants were categorized based on their personalities, revealing a prevalent tendency towards introversion and

Quality PointPal: AI-Enhanced Redefinition of Social Networking for Sustainable Digital Usage and Genuine Human Connections

lower conscientiousness among respondents. The survey, which engaged approximately 80% of the targeted demographic, yielded noteworthy insights. For instance, nearly 80% of participants indicated varying degrees of comfort in utilizing social platforms for real-life engagements, a trend elucidated in figure 1(a). This phenomenon is comprehensible, given that many individuals experience unmet needs for social engagement, often succumbing to digital addiction. Moreover, the predominant activities chosen by participants on our platform revolved around niche interests, such as stargazing, visits to historic sites, nature-themed pursuits, and board and chess games, as illustrated in figure 1(b). This underscores the necessity for a social platform that caters to a diverse array of interests, including those considered niche. Participants were also tasked with ranking features deemed essential for facilitating offline meetups. The results revealed that users accorded the highest priority to the Interactive Map, followed by AI Chatbot Assistance, underscoring the significance of user support. User Meetups Reviews garnered the third position, indicative of the importance placed on peer feedback. Conversely, Photo & Media sharing was deemed relatively less crucial, as delineated in figure 1(c). Furthermore, a majority of respondents indicated a preference for moderately controlled access to diverse platform features, as evidenced in figure 1(d). Remarkably, the least favoured alternative was flexible control, indicating a preference for a structured and secure environment over an unrestricted approach to access controls within the social platform. The survey underscores a demand for an offline-to-online meetup platform, with 80% of participants expressing comfort in utilizing social platforms for real-life engagements and displaying a pronounced preference for niche interest activities. The implementation of features such as an Interactive Map and AI Chatbot Assistance to facilitate offline meetups further validates the platform's potential value in revolutionizing the social application industry.
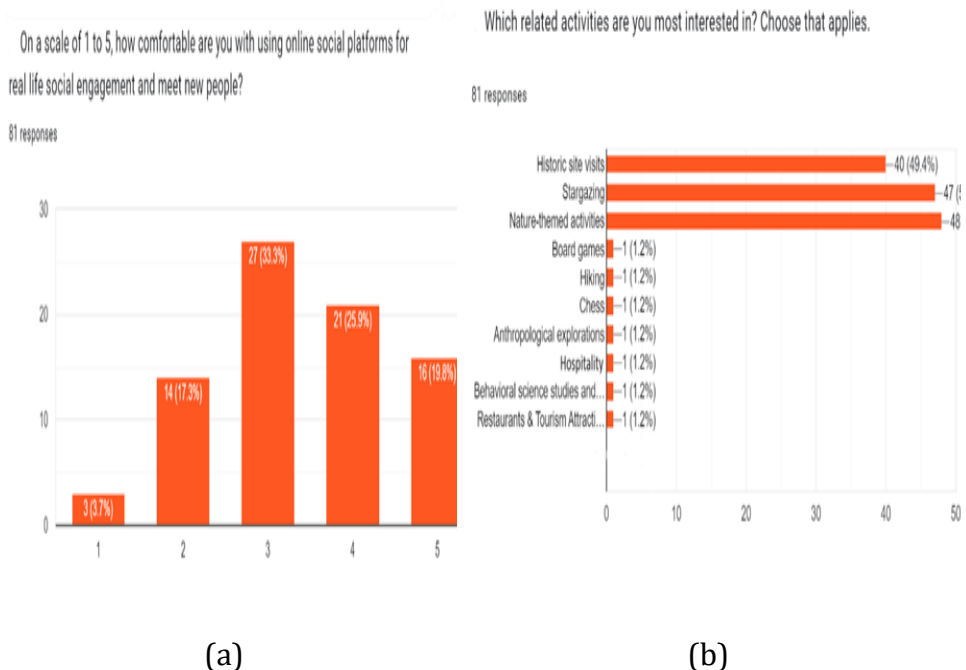
(a)   (b)

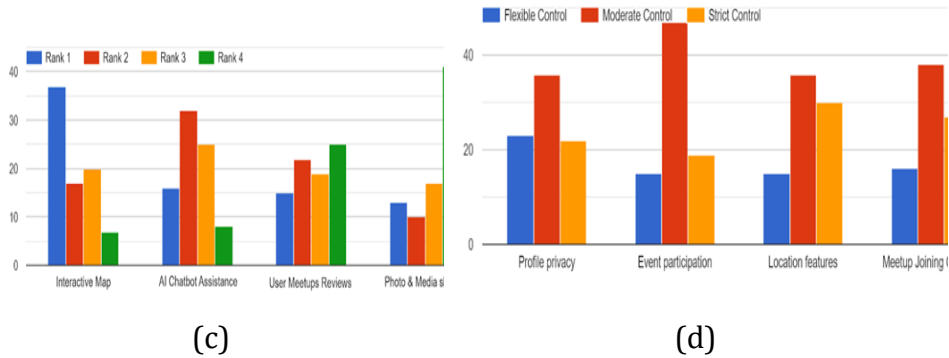(c)   (d)

Figure 1. Data Collection and Survey Results

4.   The Proposed Application

4.1   The System Architecture

This segment offers a comprehensive examination of PointPal's software architecture. The micro services architecture was selected to underpin PointPal's expansion, providing both modularity and scalability. This architectural framework is adept at accommodating an expanding user demographic and aligning with the evolving requirements of the application. Illustrated in Figure 2, our envisioned application adheres to the client-server architecture, incorporating numerous interconnected micro services, each tailored to distinct functionalities. Table 2 elucidates these micro services, offering insight into their respective roles in bolstering PointPal's operations.
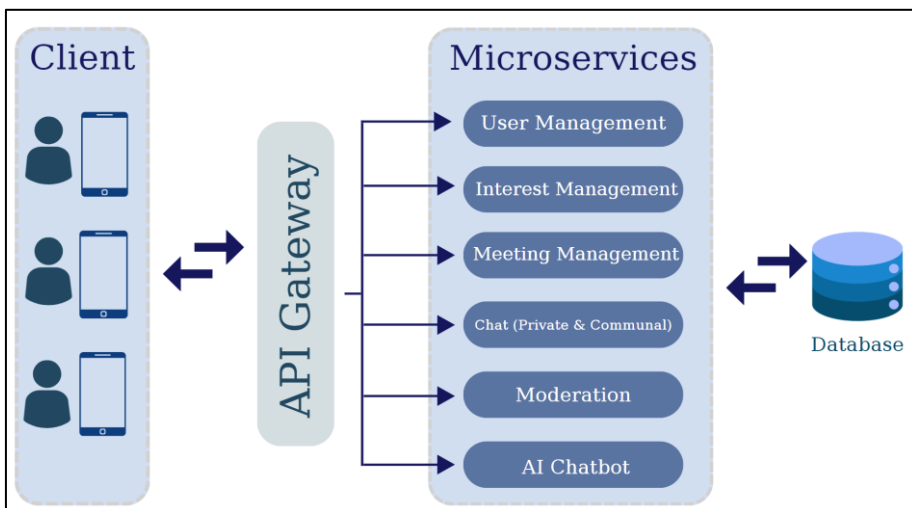

Figure 2. PointPal's Microservice Architecture

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Table 2. PointPal's Service Components

Service Name	Description
User Management Microservice	This Microservice is responsible for user registration, authentication, and profile management, and manages user interactions during account setup. Users are prompted to upload a valid form of identification during this process, which is then reviewed by a moderator to ensure that the user is over the age of 18.
Interest Management Microservice	This Microservice handles the creation, updating, and retrieval of user-selected interests, personalizing the user experience accordingly.
Meeting Management Microservice	This Microservice displays relevant meetup information to users and handles the scheduling, verification, and details of meetups. If a user schedules a meeting, it must first be reviewed and approved by a moderator to ensure the location is set to a public setting, ensuring all participants' safety.
Chat Microservice	This Microservice manages community and private group chats, ensures smooth communication, and allows for real-time chat functionalities.
Moderation Microservice	This Microservice allows for the management of user reports, enabling moderators to review user-reported cases and equips them with content and user moderation tools. Moderators have access to a centralized dashboard displaying all open and closed user reports. They can address harmful content and ensure compliance with privacy and protection policies. Additionally, moderators monitor public community chats and issue warning alerts to users violating privacy and protection guidelines. In managing reported cases, moderators can take numerous actions, including warning, blacklisting, or suspending user accounts.
AI Chatbot Microservice	This Microservice powers the AI chatbot, assisting users with scheduling, navigation, and other inquiries.

4.2 Application Features

The proposed system encompasses the following attributes:

1. Central to PointPal is a user-friendly map interface, serving as the focal point for displaying nearby meeting locations. This interface empowers users to effortlessly schedule or join meetups, facilitating immediate connections with individuals sharing similar interests.
2. Users are afforded the opportunity to partake in group discussions via chat functionalities, centred on mutual interests. This fosters a dynamic community environment where meaningful conversations flourish and interpersonal relationships deepen.
3. Following each meetup, users are encouraged to contribute detailed reviews and ratings. This iterative feedback mechanism furnishes valuable insights, enabling users to make well-informed decisions regarding their future participation.
5. Moderators utilize a dedicated dashboard to promptly assess and address any reported issues, thereby ensuring the maintenance of a secure and harmonious community environment

4.3 AI-Powered Interaction

The proposed system integrates AI sound recognition, allowing users to interact naturally through voice commands. Advanced algorithms such as Spectral Subtraction and Amplitude Normalization refine raw audio in the pre-processing phase, ensuring clarity and eliminating noise. Acoustic modelling, including statistical models and advanced techniques like Recurrent Neural Networks, captures voice nuances for precise interpretation. Language modelling enhances contextual understanding, enabling accurate interpretation of user inquiries and deeper comprehension of intent. Following the acoustic and language models, a decoding mechanism Ward (2021) converts them into an analysable format. Post-processing further refines the decoded data to improve coherence and relevance, priming it for generating a response. The user's initial vocal input serves as the basis for crafting an appropriate response. Figure 3 delineates the incremental evolution of our AI sound recognition system, showcasing its intricate processes and its ability to transform spoken queries into meaningful responses.
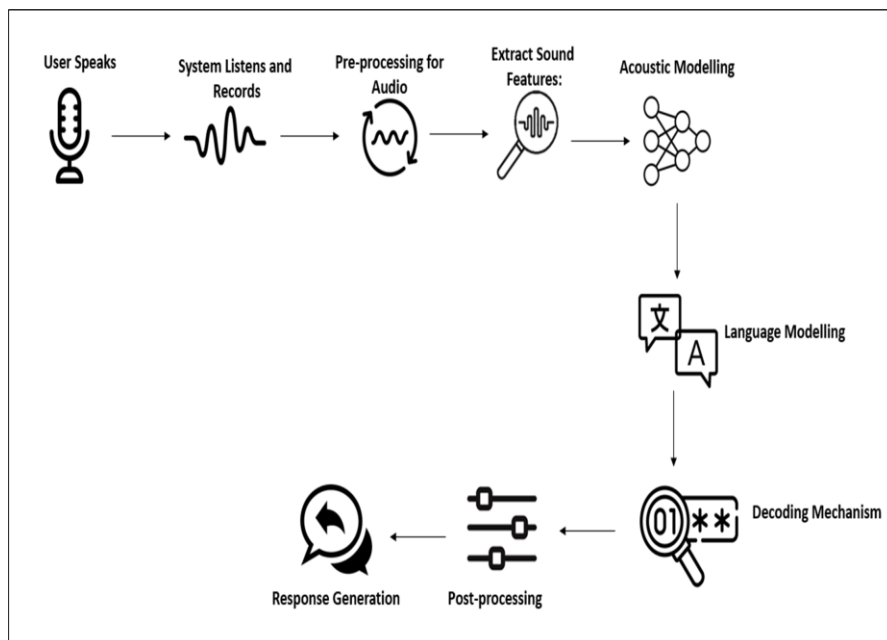

Figure 3. Flowchart Showcasing the AI Sound Recognition Process

5. Development Process

5.1 Tools, Languages, and Platforms Used

To construct our proposed application, we adopt a versatile technological framework. React.js is employed for frontend development, providing an interactive and adaptable User Interface (UI). On the backend, Java is utilized to oversee application logic and data processing. MongoDB, a NoSQL database, efficiently

manages user profiles, meetup details, and chat data. Swagger facilitates precise API documentation and management. Microsoft Azure is utilized for deployment to ensure scalability. This streamlined technology stack satisfactorily fulfils the requirements of our proposed platform.

5.2   Application Scenario

The initiation of the user's engagement commences with the establishment of an account, wherein individuals provide their email and phone number details. Throughout the account setup phase, users are prompted to furnish a valid identification card to facilitate age verification. This authentication step holds significance, as moderator approval is requisite for all users to confirm their age exceeds 18 years. Furthermore, users are afforded the choice to integrate their accounts with various social media platforms, as delineated in Figure 4(a). An additional pivotal facet of the account setup process entails the selection of interests, a determinant that shapes the user's interaction within the platform milieu, as depicted in Figure 4(b).

Upon registration, users are granted entry to an interactive map showcasing meeting points categorized by their selected interests, as exemplified in Figure 4(c). By selecting a meeting point, users unveil comprehensive details encompassing attendees, organizers, location, timing, and succinct descriptions furnished by the organizers. Subsequently, users have the option to participate in the meeting if it aligns with their preferences. Additionally, the system empowers members to filter and arrange their own meetups, thereby ensuring a tailored and personalized experience.

Enrolled participants are enabled to engage in communal discussions tailored to specific interests, accessible through public community chats as illustrated in Figure 4(d). Moderators possess oversight of these communal discussions and are furnished with tools for content and user moderation to uphold adherence to privacy and safety protocols, thereby cultivating secure online interactions within the application.

To enhance safety during in-person gatherings, individuals are prompted during account setup to nominate at least one trusted friend or family member as a contact. In instances where a user experiences discomfort or insecurity during a gathering, they may activate the Personal Safety Button. This feature promptly shares their current location and meetup particulars with the designated trusted contact(s), as illustrated in Figure 4(e). The collaborative functionality of the Personal Safety Button and moderation tools serves to fortify user safety both within and beyond the scope of our proposed application.

Ultimately, PointPal integrates an AI-driven chatbot. This digital assistant facilitates users in arranging meetups, navigating the application, and offering overall guidance. Leveraging natural language processing, the chatbot augments communication, rendering it an essential component of the user interface, as depicted in Figure 4(f).

(a)   (b)   (c)

(d)   (e)   (f)

Figure 4. Illustrative Demonstration of PointPal

5.3 Major Impacts and Benefits

This application is poised to capture user interest by enabling them to discover and connect with individuals who share their real-world interests. The opportunity to expand their social circles, whether in search of new acquaintances, professional contacts, or interest-based communities, serves as a strong motivator for users. Distinguished by its innovative approach to fostering connections and encouraging in-person interactions, our software system offers a distinctive proposition. While most platforms focus solely on online connections, ours seamlessly bridges the gap between the physical and virtual realms.

6. Evaluation and Results

6.1 Evaluation of the Proposed Application

The assessment of various social platforms elucidated in this scholarly article, including OldKids, Find & Connect, Meetup, Reddit, Facebook Events, Eventbrite, Foursquare, Tinder, and Bumble, is delineated in Table 3. In synthesis, our proposed application, "PointPal," emerges as a promising solution relative to the scrutinized social platforms owing to its distinctive attributes and robust privacy measures. In contrast to platforms that may confine access to specific age demographics or enclosed ecosystems, our application introduces unique elements such as an interactive map featuring diverse points of interest, AI chatbot support, group conversations, and meetup evaluations and feedback. Furthermore, our proposed application distinguishes itself by affording users comprehensive control over their privacy settings. Users possess the capability to regulate the visibility of their personal details, engagements, and whereabouts, thereby addressing concerns pertaining to security and autonomy. Unlike extant applications, PointPal strikes an equilibrium between pioneering social functionalities and user safeguarding, rendering it an auspicious selection for individuals seeking an engaging and secure social milieu.

7. Discussion

The evaluation of various social platforms, including OldKids, Find & Connect, Meetup, Reddit, Facebook Events, Eventbrite, Foursquare, Tinder, and Bumble, reveals significant insights into their unique features, limitations, and privacy concerns. This comparative analysis is encapsulated in Table 3 and forms the basis for a thorough discussion of the merits and demerits of these platforms in addressing contemporary social needs. Our proposed application, PointPal, emerges as a promising alternative, combining unique attributes with robust privacy measures to address the limitations identified in existing platforms.

One of the primary observations from the evaluation is that most existing platforms cater to specific demographics or focus on niche functionalities. For instance, OldKids is tailored towards older age groups, leveraging voice chat rooms and instant messaging to facilitate geographically proximate offline gatherings. However, its age-specific focus limits its broader applicability, and ensuring user privacy in voice chat rooms and online forums remains a significant challenge. Similarly, Find & Connect employs RFID technology for real-time location tracking and contact requests based on common research interests. Despite its innovative approach, the complexity of deployment due to RFID technology and its operation in planned closed spaces restricts its usability, with privacy concerns related to location tracking being a major drawback.

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Table 3. A Benchmarking For the Current O2O Platforms

Platform	Unique Features	Limiting Features	Privacy/Security Concerns
OldKids	Geographically Proximate Offline Gatherings, voice chat rooms, instant messaging	Platform is limited to older age groups	Challenges ensuring user privacy in voice chat rooms, online forums, and instant messaging
Find & Connect	RFID technology for real-time location calculation, recommendation system based on common research interests, contact requests	Complexity of deployment due to RFID technology, operates only in planned closed spaces	Privacy concerns related to tracking users' locations
Meetup	Dual-user system, Keyword-Based Advertising, diverse niche communities, large user base	Organizer Dependency, subscription fee for organizers, limited participation in areas with fewer users	Privacy and security implications, including unintended data leakage and machine learning risks
Reddit	Subreddit system, topic-focused communities facilitating interest-based discussions, sharing content	No options for face-to-face interaction, online focused interactions (O2O)	Anonymity for users but may be subject to data tracking
Facebook Events	Integration of Facebook Groups and Events, leveraging Facebook's extensive user base	Dependence on active user participation and engagement	Privacy controls for personal information, location sharing, and content moderation tools, but lacks safety issues
Eventbrite	Easy event creation, ticketing services, promotion, and discovery options	Reliance on email notifications and browsing rather than real-time engagement, dependency on event organizers	Data collection of user data related to event attendance & preferences
Foursquare	Locative technology, participatory mapping, leveraging location-based information for "local discovery"	Contributes to feelings of alienation from physical surroundings, leading to diminished engagement with offline	Privacy concerns related to location-based information and physical engagement
Tinder	Matchmaking algorithm, cross-platform integration, built-in messenger for post-interaction communication	Lack of features for user authorization leading to destabilizing trust & unlikelihood for face-to-face meetups	Collects extensive user data & a lack of protecting users' real-time location
Bumble	Dating app with swiping feature, built-in messenger for post-interaction communication	Restrictions of the free tier account	Privacy concerns regarding data sharing with third parties and potential security weaknesses
PointPal	Interactive map with diverse points of interest, AI chatbot assistance, group chats, meetup reviews, moderation tools	Limited number of users may hinder meetups & a lack of meaningful AI assistance might render useless	Provides users with multitude privacy controls, to manage the visibility of personal information, location, and activities on the platform. Also implements user identification during account setup to prevent malicious users

Quality PointPal: AI-Enhanced Redefinition of Social Networking for Sustainable Digital Usage and Genuine Human Connections

Meetup stands out for its dual-user system, keyword-based advertising, and diverse niche communities, attracting a large user base. Nevertheless, its dependence on organizers, subscription fees, and limited participation in areas with fewer users pose significant limitations. Privacy and security concerns, including unintended data leakage and machine learning risks, further complicate its utility. Reddit, with its subreddit system and topic-focused communities, facilitates interest-based discussions and content sharing but lacks face-to-face interaction options, making it predominantly an online interaction platform subject to data tracking despite user anonymity.

Facebook Events leverages the extensive user base of Facebook by integrating groups and events, depending on active user participation and engagement. While it offers robust privacy controls for personal information and location sharing, it lacks adequate safety measures, which can be a deterrent for some users. Eventbrite, known for easy event creation, ticketing services, and promotion options, relies heavily on email notifications and browsing rather than real-time engagement, with data collection on user attendance and preferences raising privacy concerns.

Foursquare utilizes locative technology and participatory mapping for local discovery, but it can contribute to feelings of alienation from physical surroundings, reducing offline engagement. The platform's reliance on location-based information also raises significant privacy concerns. Tinder and Bumble, primarily dating apps with swiping features and built-in messengers, face criticism for their lack of robust user authorization features, leading to trust issues and unlikely face-to-face meetups. Both platforms collect extensive user data and share concerns about privacy and data security, especially regarding real-time location tracking and data sharing with third parties.

In contrast, PointPal distinguishes itself by addressing these limitations through innovative features and a strong emphasis on user privacy and security. The interactive map with diverse points of interest, AI chatbot assistance, group chats, and meetup reviews offer a comprehensive platform for facilitating real-world interactions based on shared interests. PointPal's moderation tools further enhance user safety by reviewing identification, handling reported cases, and moderating community chats. A critical advantage of PointPal is its robust privacy controls, allowing users to manage the visibility of their personal information, location, and activities on the platform. By implementing user identification during account setup, PointPal mitigates the risk of malicious users, thereby enhancing trust and security. Despite the potential drawback of a limited user base which might hinder meetups, and the challenge of providing meaningful AI assistance, PointPal's balanced approach to social functionalities and user safeguarding presents a compelling solution for individuals seeking an engaging and secure social milieu.

In short, the comparative analysis underscores the unique strengths and weaknesses of existing social platforms, highlighting the need for a more integrated and secure approach. PointPal, with its innovative features and strong privacy measures, emerges as a viable alternative, offering a balanced solution to the challenges of modern social networking. This discussion reaffirms the potential of PointPal to revolutionize the social networking landscape, promoting genuine human connections while ensuring user safety and privacy.

8.   Conclusion

PointPal has showcased its viability as a pioneering social networking platform, emphasizing genuine in-person connections via user-friendly profiles and dynamic group discussions. While its notable features ensure an immersive user interaction, it is imperative to recognize areas necessitating refinement, such as challenges related to integration intricacies and data synchronization, warranting continuous vigilance and refinement.

9.   Study Limitations

The study's findings and conclusions may be influenced by the rapid evolution of technology, including changes to social media platforms or advancements in AI, which could impact the relevance and applicability of the results over time. The study's measurement tools, such as surveys or algorithms, may have limitations in accurately capturing complex phenomena like social interactions or user experiences. The study's findings may be influenced by temporal factors such as seasonal variations, trends in technology usage, or external events that could impact user behaviours and perceptions during the study period.

10. Implications

This study provides a deeper understanding of how digital interactions influence social behaviours, particularly the hikikomori phenomenon. By exploring the limitations of current online platforms in fostering genuine connections, the research highlights the necessity for innovative solutions like PointPal that bridge the gap between virtual and real-world interactions. The development and implementation of PointPal can serve as a model for future social networking applications aiming to mitigate issues associated with social withdrawal and excessive digital engagement. The integration of features such as AI-driven voice recognition, a personal safety button, and a centralized database for information storage offers a blueprint for creating safer and more interactive digital spaces. This study lays the groundwork for future research on the intersection of digital technology and social behaviour. It suggests avenues for exploring how different demographic groups interact with such platforms and the long-term effects of integrated social networking tools on reducing social withdrawal.

11. Future Work

Prospective research endeavours ought to concentrate on honing algorithms to tackle integration complexities and enhance scalability. The dedication to ongoing enhancement and adjustment in response to evolving technological landscapes is paramount. Furthermore, the exploration of novel features and advancements to fortify PointPal's efficacy will play a pivotal role in ensuring its sustained success in fostering meaningful connections. The trajectory of the platform is delineated not solely by its present accomplishments but also by a steadfast commitment to

overcoming challenges and evolving congruently with the dynamic requirements of its user constituency.

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