# YouWalk-UOS -- Technology-Enabled and User-Centred Assessment of Urban Open Spaces

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<tbody>
<tr>
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“YouWalk-UOS” -- Technology-Enabled and User-Centred Assessment of Urban Open Spaces

Abstract

Purpose: This paper introduces the YouWalk-UOS mobile application, a tool that revolutionises the assessment of urban open spaces (UOS). The paper demonstrates how integrating real-time, on-ground observations with users’ reactions into a digital platform can transform the evaluation of urban open spaces. It seeks to address the existing shortcomings of traditional UOS assessment methods and underscore the need for innovative, adaptable, and inclusive approaches.

Design/Methodology/Approach: Emphasising the necessity of UOS for mental and physical health, community interaction, and social and environmental resilience in cities, the methodology involves a comprehensive analysis of a number of theoretical frameworks that have historically influenced urban open space conceptualisation, design, and assessment. The approach includes a critical review of traditional UOS assessment methods, contrasting them with the capabilities of the proposed YouWalk-UOS application. Building on the reviewed theoretical frameworks, the methodology articulates the application’s design, which encompasses 36 factors across three assessment domains: functional, social, and perceptual and provides insights into how technology can be leveraged to offer a more holistic and participatory approach to urban space assessment.

Findings: YouWalk-UOS application represents an important advancement in urban space assessment, moving beyond the constraints of traditional methods. The application facilitates a co-assessment approach, enabling community members to actively participate in the evaluation and development of their urban environments. Findings highlight the essential role of technology in making urban space assessment more user-centred, aligning more closely with community needs and aspirations.

Originality: The originality lies in the focus on the co-assessment approach and integration of mobile technology into urban open space assessment, a relatively unexplored area in urban design literature. The application stands out as an innovative solution, offering a new perspective on engaging communities in co-assessing their environments. This research contributes to the discourse on urban design and planning by providing a fresh look at the intersection of technology, user engagement, and urban space assessment.

Keywords
Urban Space, Mobile Applications, Community Engagement, Co-Assessment, Technological Innovation.
1. Introduction

Urban open spaces (UOS) are more than aesthetic elements in modern cities; they are crucial for mental and physical health, providing possibilities for relaxation, exercise, and connection with nature (Beck, 2009; Carmona et al., 2010; Kaplan and Kaplan, 1989). Beyond such benefits, these spaces foster community ties and social interactions, and are thus indispensable elements in cities. They also play a crucial role in addressing climate change and environmental pressures, acting as vital components of urban resilience strategies. However, catering to the diverse needs of growing urban populations in these open spaces is complex. It requires a balance between ecological preservation and recreational use, accessibility for all community members, and sustainable maintenance (Pinto and Remesar, 2012). Traditional urban space evaluation methods often fall short of meeting the rapidly changing needs of contemporary societies (Amin, 2007; Carmona, 2015; Gehl, 2011; Yu and Fang, 2023). This gap instigates the need for innovative, adaptable, and inclusive approaches in assessing and managing urban open spaces, aligning with the aspirations of sustainable city development.

The urban planning landscape is undergoing a significant transformation driven by technological innovation. Integrating digital tools and mobile applications marks a fundamental shift toward more agile, responsive, and user-centric urban practices (Evans-Cowley, 2011; Sabri and Witte, 2023). These technologies enable dynamic, real-time, and participatory approaches to urban space assessment. For instance, mobile applications facilitate data collection on user behaviour, preferences, and use patterns in the urban realm, which can inform urban planning decisions (Friedmann, 2011). This shift allows for greater community engagement and input and represents a move toward more data-driven and sustainable urban assessment and development.

Globally, several cities demonstrate the successful integration of technology in urbanism. Singapore's Smart Nation Initiative uses sensors and IoT devices to enhance urban maintenance and inform future development (Smart Nation and Digital Government Office, 2023). Copenhagen has utilised data from GPS-equipped bikes and mobile apps to transform into a bike-friendly city (The City of Copenhagen, 2011). Smart technologies in parks and public spaces have improved energy management and public safety (Ferrer, 2016). New York City's Open Data Portal provides valuable data for effective urban space planning (City of New York, 2022). Amsterdam's Smart Roof Project demonstrates the innovative use of rooftop spaces for green recreation (Verheugen, 2018).

Notably, the application of technology extends to simulation models and predictive analytics for forecasting urban growth and using virtual and augmented reality technologies to visualise urban design proposals and intervention strategies. These advancements are enhancing communication between planners, stakeholders, and the public. However, this technological shift also brings challenges, including ensuring equitable access and addressing privacy concerns (Kitchin, 2014; Talen, 2022). It is crucial to balance innovation with inclusivity, privacy, and ethical data use considerations.

This paper introduces a novel mobile application to revolutionise urban open space assessment. This application aims to enable inclusive, data-driven, and participatory approaches, ensuring that urban open spaces meet diverse communities' evolving needs and preferences sustainably and responsively. **By leveraging digital tools and mobile technologies, this**
application aims to provide architects, urban designers, and municipal authorities with real-time insights into how urban spaces are used and perceived by users. Such insights can inform more responsive, sustainable urban planning strategies that are closely aligned with user needs and aspirations. Through examples of technology integration in cities like Singapore, Copenhagen, and New York, this paper illustrates the potential of technological advancements to enhance urban living. However, it also addresses the challenges of ensuring equitable access and maintaining privacy and ethical standards in data use. The central message that this paper conveys is the importance of aligning assessment with community needs and aspirations and the pivotal role technology should play in rapidly evolving and diverse urban contexts.

2. Theoretical Frameworks on Urban Open Space Assessment

The development and evaluation of mobile applications for urban environments are profoundly shaped by seminal theoretical frameworks, which have significantly influenced the criteria used to assess existing applications and instigate and validate YouWalk-UOS. The work of scholars such as Whyte (1980), Lynch (1960), Carmona (2015), Carmona et al. (2010), Ellin (2013), Tuan (1974), and Appleyard (1980) has been instrumental in this process, providing insights that guide the integration of technology into urban spaces and its impact on users. For instance, Whyte's (1980) emphasis on systematic observation has catalysed the adoption of sensor technologies and data analytics for real-time monitoring of urban spaces, reflecting a direct application of his principles in the realm of smart cities.

Building on these foundational ideas, the evaluation criteria for YouWalk-UOS have been distilled into three primary dimensions: functional, social, and perceptual, each underpinned by the contributions of these theorists. The functional dimension, inspired by Lynch's imageability (1960) and Carmona's multifunctional urban design principles (2010), focuses on the usability, accessibility, and utility of mobile applications, emphasizing the need for them to serve a broad spectrum of urban needs efficiently. This dimension highlights the evolution of urban navigation and engagement through technologies such as digital mapping and augmented reality (Meenar et al., 2019; Wang, 2023).

The social dimension draws from Whyte's (1980) and Appleyard's (1980) research on the social dynamics of urban spaces, reflecting the importance of mobile applications in fostering community engagement and enhancing social connections (Anderson et al., 2017; Zapata and Honey-Rosés, 2020). This dimension underscores the role of mobile applications in supporting communal activities and facilitating a richer social interaction within urban environments, mirroring the concepts discussed in "The Social Life of Small Urban Spaces" and "Livable Streets."

The perceptual dimension is influenced by Tuan's (1974) 'topophilia' and Ellin's (2013) advocacy for diverse and adaptable urban spaces, focusing on the emotional and cognitive engagement of users with the application (Khavarian-Garmsir et al., 2023). This dimension encompasses aesthetics, user satisfaction, and the capacity to evoke a sense of place or attachment, directly aligning with the emotional and cultural connections to space highlighted by Tuan.
Recent advancements in urban open space assessment have led to the development of comprehensive methodologies for evaluating these areas. The Multi-Attribute Value Theory (MAVT) (Oppio et al., 2022), was developed to assess open spaces by assigning numerical scores to open spaces based on attributes such as accessibility, liveability, vitality, and identity. This approach, successfully applied in Milan, Italy, involves a four-phase framework for greenspace: planning, integrating GIS-based indicators with socio-economic and land-use data. The RECITAL tool was introduced to assess urban green spaces with a focus on human health, proving effective in evaluating 149 spaces (Knobel et al., 2021). Another innovative method involved analysing TripAdvisor reviews for New York City’s Bryant Park, providing insights into user perceptions and park design elements (Fernandez et al., 2022).

A tool assessing 12 spatial and managerial qualities of public parks highlighted issues like deterioration and over-commercialisation (Aly and Dimitrijevic, 2022). This tool emphasises a comprehensive evaluation over simple checklists, aiding in improving open space standards. Additionally, a planning framework addressing accessibility needs of different social groups in urban greenspaces was applied in Catania, Italy, and Nagoya, Japan, demonstrating its adaptability in various urban settings (La Rosa et al., 2018). These developments mark a significant shift towards multidimensional, technology-based, and user-centric approaches in urban open space assessment while enhancing the quality, accessibility, and management of these urban open spaces.

These preceding theoretical underpinnings of UOS assessment, drawn from diverse frameworks are embodied in the YouWalk-UOS application proposed for co-assessment. Whyte’s emphasis on real-time, on-ground observations is translated into the app’s feature for live feedback on urban spaces. Similarly, Bentley’s (1985) and Sanoff’s (1991) advocacy for responsive environments resonates with YouWalk-UOS’s ability to adapt urban spaces based on user input, reflecting a dynamic interaction between the environment and its inhabitants. Overall, the identification of 12 specific aspects under each of these dimensions was made possible through a detailed examination of the theoretical frameworks. The application effectively bridges the gap between traditional theoretical approaches and contemporary urban design needs, leveraging digital technology to gather data and foster a deeper, more meaningful engagement with urban spaces. In this way, YouWalk-UOS serves as a tangible example of how theoretical frameworks can be operationalised through technological solutions, offering empirically rich insights relevant to the evolving dynamics of urban life.

3. Critique of Traditional Methods

Traditional methods of UOS assessment have notable limitations that can hinder their effectiveness in evaluating the complexities of modern urban environments. These can be identified as follows:

- **The Static Nature of Observation Studies**: Traditional observation studies provide snapshots of urban life at specific times, failing to capture the dynamic nature of urban spaces across different times and seasons (Gehl, 2011). This limitation can lead to an incomplete understanding of the qualities of these spaces.
• **Dependence on Historical Data**: Relying on historical data restricts the ability of urban planners to respond proactively to current and emerging trends, as this data may need to reflect the latest urban dynamics accurately (Sassen, 2018).

• **Expert-Driven Approaches and Lack of Public Engagement**: Traditional methods, such as observation studies and GIS analyses, are often expert-driven and need more substantial input from the communities that use these spaces (Arnstein, 1969). This limitation could result in a disconnect between design intentions and actual use, failing to fully consider residents' diverse needs and preferences.

• **Scalability and Resource Challenges**: The resource-intensive nature of traditional assessments poses scalability issues, particularly in more extensive urban settings (Hall, 2002). Additionally, the time-consuming process can render findings obsolete when ready for implementation or improvement actions.

• **Subjectivity and Bias Issues**: Observation methods are susceptible to observer biases, potentially leading to a skewed representation of space use that does not accurately reflect the experiences of diverse demographic groups (Jacobs, 1961).

• **Neglecting Emotional and Cultural Dimensions**: Traditional approaches typically focus on physical and functional aspects, often overlooking emotional experience and cultural significance emphasised in Tuan's concept of topophilia (Tuan, 1974).

• **Overlooking Social Dynamics**: As scholars like Donald Appleyard (1980) and Matthew Carmona (2010) suggested, traditional assessments sometimes neglect the vital social dynamics and street-level interactions that contribute to urban vibrancy and liveability.

• **Rigidity in Responding to Evolving Needs**: Traditional methods often lack the flexibility and responsiveness necessary to adapt to changing user needs and behaviours, a key concern raised in Bentley's principles (Bentley et al., 1985).

While these limitations have always been discussed over the past three decades, assessment approaches have not evolved to address possible improvements. Hence, in response to these limitations, integrating technology, primarily through innovative mobile applications, offers a more dynamic and inclusive approach considering recent technological advancements. Such applications provide real-time data, enable direct public engagement, and offer scalable solutions, marking a significant evolution in urban space assessment mechanisms. This shift towards tech-enabled approaches is instrumental in effectively addressing the multifaceted and evolving nature of the urban environment.

### 4. Technological Advancement in Urban Space Assessment

Integrating technology, especially mobile applications, in urban planning is also well-documented. (Brasuell, 2022) discusses how mobile apps are redefining various planning practices, including urban, regional, transportation, community, and rural planning. Geertman and Stillwell (2020) provide an overview of the growing attention towards applying digital technologies in urban planning and management (Sabri and Witte, 2023). Recently, scholars delved into apps development to generate citizen involvement in local planning processes, highlighting the intersection of urban planning, public participation, and digital technology (Wilson et al., 2017). In essence, discussions have been on the rise on how urban planners can
use mobile applications to increase productivity, share information, and engage with the public, thus adding value to urban planning work (Evans-Cowley, 2011). These authors instigate a new discourse and accentuate the significance of urban open space assessment in growing urbanisation and the transformative role of technology, particularly mobile applications, in revolutionising urban space design and assessment.

Mobile applications represent a paradigm shift in UOS assessment by leveraging the power of technology to overcome the limitations of traditional methods. These mobile applications offer real-time data collection and analysis, enabling urban designers to respond promptly and effectively to current and emerging trends in urban environments. This approach not only aligns with the dynamic nature of urban spaces but also ensures that the assessments are more reflective of current realities. Moreover, mobile applications democratise the assessment process by facilitating direct public engagement. Residents can actively participate in the evaluation and improvement of their urban spaces, ensuring that the assessments are grounded in the diverse experiences and preferences of the community. Several applications leverage street view imagery for urban open space assessment offer valuable insights into the design and use of public spaces. By analyzing visual data from platforms like Google Street View, these tools enable efficient, remote evaluation of urban environments, identifying patterns in design, pedestrian flow, and green space distribution (Han et al., 2022). This level of engagement is crucial for creating urban spaces that are not only functional but also emotionally and culturally resonant with the people who use them. Furthermore, the scalability and resource efficiency of mobile applications like YouWalk-UOS make them suitable for complex urban settings, addressing the challenges of scalability and resource constraints inherent in traditional methods. In essence, the integration of such technology in UOS assessment is not just a mere improvement; it's a necessary evolution to keep pace with the multifaceted and rapidly evolving nature of urban environments.

Collectively, the theoretical frameworks discussed earlier together with the preceding calls for the integration of technology emphasise the need for a comprehensive approach to UOS assessment that draws from various knowledge domains. Integrating sociological insights, emotional connections, and technological advancements shapes urban spaces that are functional, aesthetically pleasing, and resonant with community needs. These theoretical underpinnings have been instrumental in shaping responsive approaches (Salama and Azzali, 2015) which introduce walking tour assessment studies. Such approaches bring a more immersive and participatory perspective to urban space evaluation. Rooted in the principles and insights derived from established theories, these studies emphasise the importance of direct, on-site engagement in understanding and assessing urban spaces by capturing individuals’ lived experiences and interactions within urban spaces.

The evolution of the walking tour assessment studies into technology-enabled assessments marks a significant advancement in the field. This transition represents the fusion of traditional approaches with cutting-edge technological tools. In this respect, mobile applications extend the reach and efficacy of earlier walking tour assessments (Salama et al., 2017a, 2017b; Vukovic et al., 2021), enabling a broader demographic to participate and provide feedback. These applications can collect real-time data, offering dynamic insights into how people perceive and engage with their urban environments. This technology-enabled approach leverages the power of mobile computing and digital connectivity to enhance UOS assessment. It facilitates the gathering of quantitative data and at the same time captures qualitative experiences and
perceptions. Users can provide instant feedback, share experiences, and suggest improvements, making the assessment process more inclusive and democratic.

5. YouWalk-UOS: Development and Testing

YouWalk-UOS epitomises the concept of co-assessment in urban open spaces, bringing together community members and design and planning professionals in a collaborative evaluation process (Salama and Patil, 2023; Salama and Patil, 2024). As an innovative mobile application, it aims to empower citizens to assess their urban environments actively. Co-assessment, at its core, is about partnership and shared responsibility (Clark, 2021; Malek et al., 2015; Sillak et al., 2021; Sutherland et al., 2017), and YouWalk-UOS is specifically designed to facilitate this interactive process.

The application enables users to provide real-time feedback on urban open spaces as they experience them. This direct involvement of residents in the assessment process is crucial; it ensures that the diverse voices and perspectives of the community are heard and considered in decisions about new urban interventions or improvement efforts. Users can report on various aspects of urban spaces, such as accessibility, safety, amenities, and overall satisfaction, directly from their mobile devices. Notably, what sets YouWalk-UOS apart is its ability to create a continuous dialogue between urban professionals and the community. By submitting their observations and suggestions through the app, residents become active participants rather than passive users of urban spaces. This input is invaluable for planners seeking to create spaces that truly reflect the needs and desires of the community. Furthermore, the real-time data collected through the app allows for timely interventions and potential adjustments, ensuring that urban spaces evolve in tandem with the community's changing needs. This ongoing, interactive process exemplifies the essence of co-assessment: a collaborative, inclusive, and adaptive approach to urban space management and development.

5.1 Designing YouWalk-UOS

Designed exclusively to assess urban open spaces, the application represents a multi-dimensional approach where users experiencing the space through walking utilise checklists in the form of questions classified under three dimensions: functional, social, and perceptual. A total of 36 factors forms the assessment framework (Figure 1) and are assessed with opportunities for the users to introduce additional factors if they wish so. This methodology is integral to understanding and enhancing the quality of urban open spaces. The core components of the application designed for assessing urban open spaces are:

A: Three-Dimensional Assessment Framework: The app's core functionality is built around assessing UOS through three key dimensions – functional, social, and perceptual.

- Functional Dimension: this dimension considers factors such as accessibility, walkability, legibility, spatial qualities, and the availability of amenities. The indicators prompt users to rate the adequacy and maintenance and the overall ease of navigation within the space. The
dimension also examines how urban spaces are aesthetically pleasing but also practical and user-friendly.

- **Social Dimension:** this dimension places emphasis on the role of urban spaces in fostering social interactions and community engagement. It involves factors related to the space capacity to accommodate public gatherings, its effectiveness in promoting community bonding, and its contribution to creating a safe and inclusive environment. The dimension is crucial in evaluating how well urban spaces can be viewed as hubs for social activities and community life.

- **Perceptual Dimension:** this dimension assesses the aesthetic appeal and emotional impact. It considers aspects such as the visual attractiveness, the ambience, and the overall experiential quality of the space. The dimension is particularly significant in understanding how urban spaces are perceived and experienced by users, contributing to their overall satisfaction and well-being.

![Figure 1. 36 factors defining the UOS assessment framework (Source: Authors).](image-url)

**B. Innovative Use of Images and Plans:** The application incorporates visual aids like photographs and plans in the assessment process, making it more tangible and relatable. Users
can interact with these visual elements, enhancing the perceptual evaluation. Moreover, plans and maps enable a more analytical approach to assessing the functional dimension, like understanding the spatial layout and distribution of amenities (Figure 2).

C. GPS Functionality for Location Tagging: With GPS integration, YouWalk-UOS allows for precise identification and tagging of assessment locations. This feature ensures that feedback is accurately associated with the specific UOS being evaluated, enhancing the reliability of the data collected (Figure 3).

D. Data Visualisation and Analysis Tools: YouWalk Urban Open Space (UOS) assessment uses a mixed methodology, leveraging the Likert scale for both qualitative and quantitative data collection. This approach systematically captures users' perceptions and attitudes towards urban open spaces, enabling a detailed analysis of public space utilization and satisfaction. The application offers sophisticated tools for data visualisation such as interactive graphs and maps. These features enable users to easily interpret and analyse patterns in urban space usage, providing valuable insights for urban planners and decision-makers (Figure 3).

E. Privacy and Security Measures: The development process of YouWalk-UOS placed a high priority on user privacy and data security. The application adheres to stringent standards and regulations to protect sensitive user information, ensuring a safe and secure user experience.

YouWalk-UOS is a comprehensive and user-friendly tool for evaluating UOS. Its multi-dimensional framework, combined with innovative use of images, encourages users to consider various factors, from functional utility to emotional resonance. Such a holistic approach is essential in eventually ensuring that UOS are designed and managed to meet the diverse needs and expectations of the community, and ultimately enhancing the quality of urban life.
5.2 Testing YouWalk-UOS

In the development phase of the YouWalk-UOS, a testing process was conducted to ensure its effectiveness and user-friendliness. This testing involved diverse participants, spanning various age groups and educational backgrounds, to garner a wide range of perspectives. Participants played a crucial role in refining the application, providing valuable feedback on critical aspects such as the clarity of the questions and factors and the overall structure of the application. Their insights led to significant revisions in the final version, enhancing both the user interface and the content for better accessibility and understanding. The questions were rephrased and structured more intuitively based on the feedback, ensuring that users from all walks of life could easily navigate and utilise the app.

Furthermore, the application is slated for an additional round of testing, this time focusing on architecture and built environment students. This step is aimed at gauging the application's efficacy and appeal to a younger demographic, further fine-tuning it to meet the diverse needs and preferences of the urban community. Through these rigorous testing phases, YouWalk-UOS is evolving into a more inclusive and user-centric tool, reflecting a broad spectrum of urban experiences and expectations.

6. Discussion: Common Challenges in Mobile Applications for Urban Space Assessment

One of the universal challenges faced by mobile applications like YouWalk-UOS in urban space assessment is ensuring the representativeness of data (Park et al., 2021; Townsend,
These applications depend primarily on their user base for feedback. However, the data collected can be biased or skewed if this user base is not a true cross-section of the population using the space. This lack of representativeness can result in assessments that fail to capture the diverse experiences and needs across all community segments.

The digital divide (Cullen, 2001; Van Dijk, 2017; Ragnedda and Muschert, 2013) is another significant challenge common to such applications. Certain demographic groups with limited access to technology or lower technological literacy may be inadvertently excluded from the assessment process in many urban environments. This exclusion poses a risk of creating a gap in understanding the needs and preferences of these underrepresented groups, leading to less inclusive urban development. Applications reliant on internet connectivity and GPS accuracy face inherent technical limitations (Graham and Marvin, 2001; Zandbergen, 2009). In areas with poor digital infrastructure, these limitations can severely impact the effectiveness and accuracy of assessments. However, these limitations are not unique to YouWalk-UOS but are expected for most mobile applications in urban space assessment or documentation. Addressing these challenges is crucial for the effective and equitable use of technology in urban planning.

Despite the preceding challenges, YouWalk-UOS stands at the forefront of a significant shift in urban space assessment, embodying a trend towards interactive, user-driven models in urban assessment. This shift is not merely technological; it represents a fundamental rethinking of how users interact with urban spaces. By facilitating real-time feedback and encouraging participatory engagement, YouWalk-UOS aligns well with modern urban theories, emphasising the importance of inclusive and dynamic environments. The design and functionality of the application resonate with contemporary urban design theories that advocate for user-centric and adaptable urban environments. It enables urban spaces to evolve in response to the changing use patterns and diverse needs of city inhabitants, thereby enhancing the relevance and utility of these spaces. This approach departs from traditional, top-down methods, moving towards a more democratised and responsive model.

The application's role in urban space assessment could have far-reaching implications. Providing a real-time user engagement platform empowers citizens to play an active role in shaping their urban environments. This can lead to more effective and sustainable urban development, where the needs and preferences of the actual users of the spaces inform decisions. Additionally, integrating YouWalk-UOS assessments with urban design and planning and municipal collaborations can significantly enhance the quality of urban life. This approach enables data-driven decision-making, providing authorities with user feedback and empirical evidence on public space utilization and satisfaction. This can inform decisions about targeted improvements, promote inclusive design, and ensure public spaces meet community needs. Ultimately, this can lead to more livable, engaging, and sustainable urban environments, reflecting a comprehensive understanding of how public spaces contribute to urban vitality. In essence, the data gathered through the app can be invaluable for urban designers and policymakers, offering insights that can guide future development and improvements.

7. Conclusion and Future Work

This paper demonstrated the transformative role of technology in urban open space assessment, with a focus on the YouWalk-UOS mobile application developed by the authors.
This application represents a paradigm shift in urban space assessment, moving from traditional methods to a more interactive, inclusive, and responsive approach. Employing a multi-dimensional assessment model covering functional, social, and perceptual aspects of urban spaces align with modern urban theories while overcoming the constraints of conventional methods. YouWalk-UOS engages a wide user base for real-time feedback, ensuring assessments mirror the community's diverse needs. Despite its innovative advancements, YouWalk-UOS faces challenges like ensuring data representativeness, bridging the digital divide, technical limitations, and protecting data privacy. Addressing these issues is crucial for the app's evolution and effectiveness in shaping future urban landscapes. Future enhancements will aim to improve accessibility, data analysis capabilities, collaboration with authorities, and data security, promising a more dynamic alignment of urban spaces with the needs of their inhabitants. It is believed that the integration of technology, exemplified by YouWalk-UOS, signals a significant advancement in urban assessment. The tool heralds a future of responsive urban environments, showcasing the potential of technology to create more liveable and sustainable urban spaces.

The YouWalk-UOS app, as a work in progress, has substantial scope for enhancing accessibility and inclusivity. Future developments will focus on integrating multilingual support and extending outreach to broader demographics. These enhancements are critical to ensure the accessibility of application to a diverse user base, enabling the collection of data that accurately reflects the broad spectrum of urban experiences and needs. Efforts will be made to tailor the interface and functionalities to cater to users from various backgrounds and levels of digital proficiency to bridge the existing digital divide. Integrating AI and machine learning is a crucial area of future development for YouWalk-UOS. Applying these advanced technologies aims to refine the analysis of data collected on urban space utilisation and use. The application can detect patterns and trends by leveraging sophisticated algorithms, providing urban designers with profound and actionable insights. Future iterations of YouWalk-UOS will seek to establish stronger collaborations with municipal authorities and urban planning bodies. The data and insights can be more directly integrated into urban policymaking and planning processes by forging partnerships with local authorities. These collaborations are envisioned to amplify the influence of the application in shaping urban spaces, ensuring that the data collected has a tangible impact on the development and improvements of urban environments.

References


Figure 1. 36 factors defining the UOS assessment framework (Source: Authors).

266x215mm (300 x 300 DPI)
Figure 2. Various interface pages of YouWalk-UOS-1 (Source: Authors).

420x297mm (300 x 300 DPI)
Figure 3. Screenshots of various interface pages of YouWalk-UOS-2 (Source: Authors).

420x297mm (300 x 300 DPI)