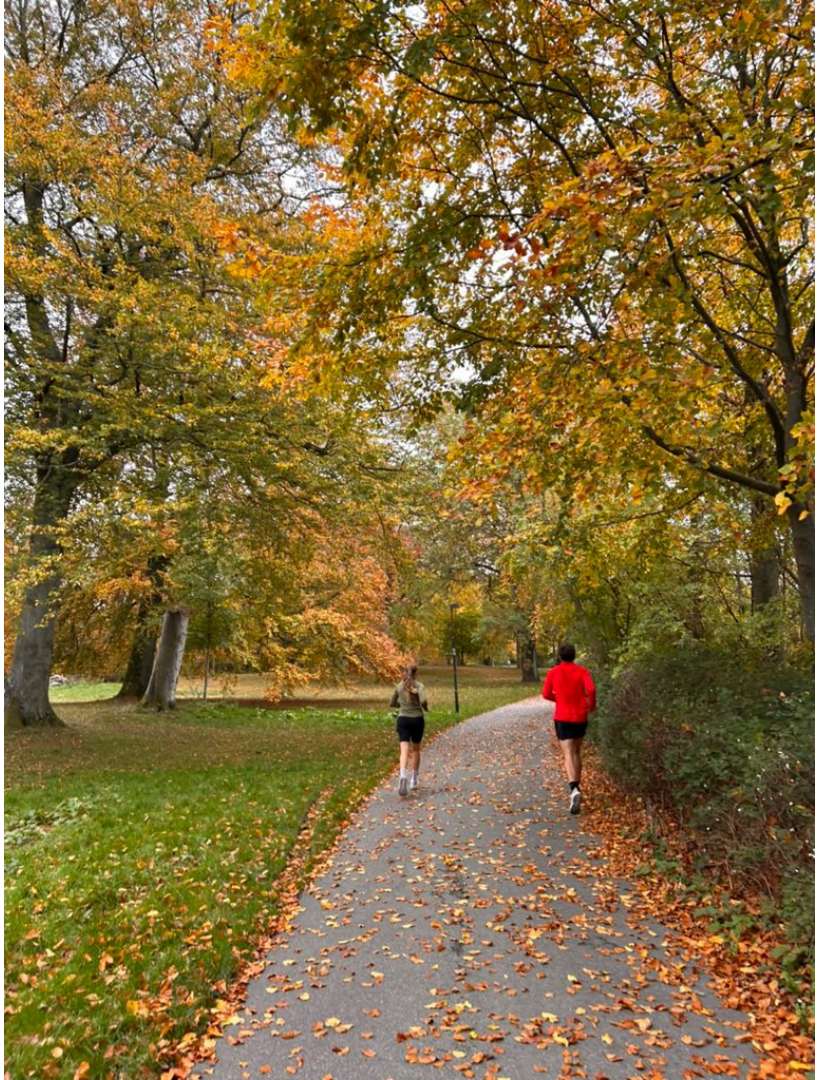
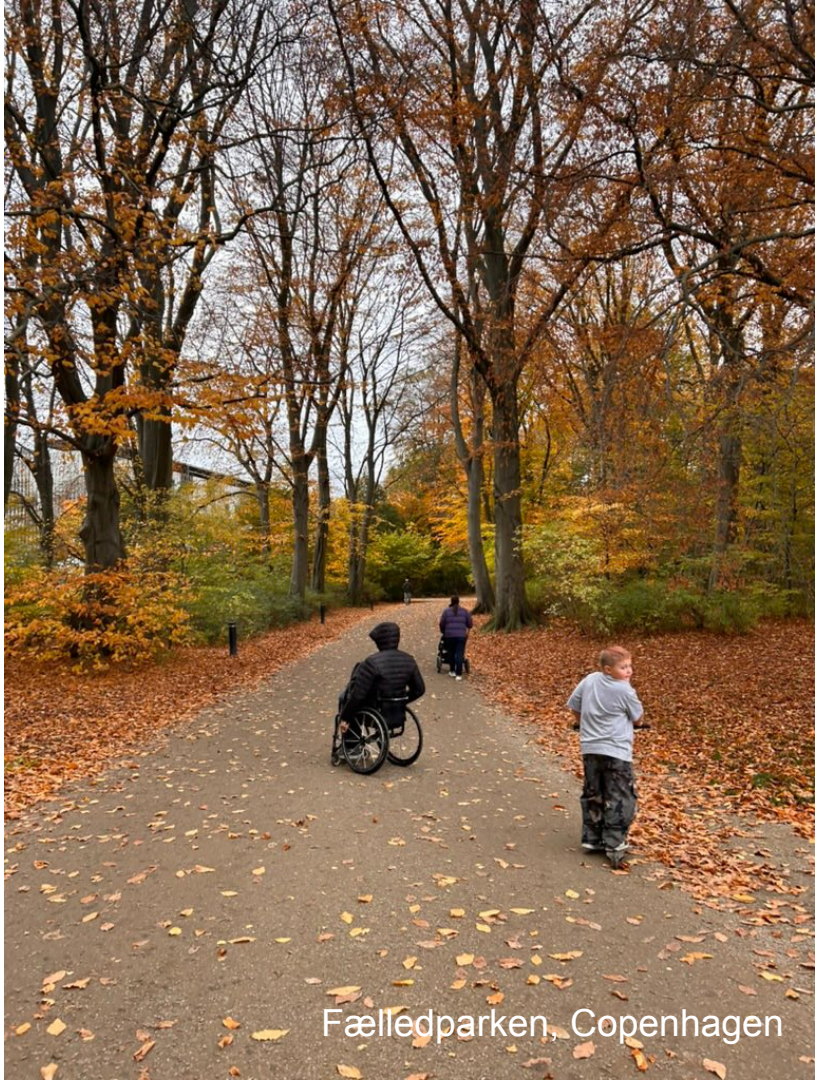
Designing Inclusive and Responsible Technologies in the Age of AI

Nitin Sawhney, Ph.D.
Docent, University of Helsinki
and University of the Arts Helsinki

Disability Tech


Inclusive Design





Fælledparken, Copenhagen

Digital inclusion is a primary right for all citizens and represents a “must-have” for granting access to knowledge, education, and work.

The HINT Lab, Politecnico Milano

Human-Centred and Participatory Design for Inclusion



Disability Tech

Inclusive Design for Blind and Visually Impaired (BVI) Individuals *and Society*

The New School and New York Public Library (NYPL)



Disability Tech

Hannah Jiang and Jenni Wu, The New School, New York City

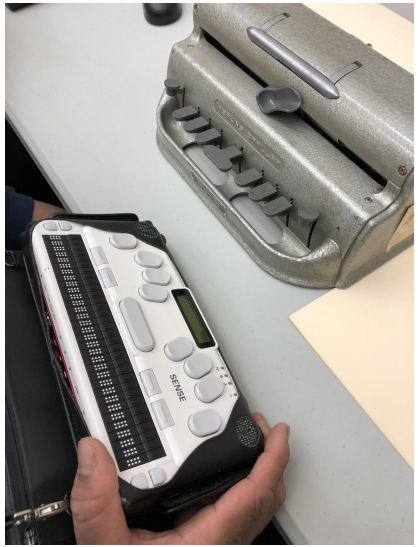
Participatory Design Research with the Visually Impaired

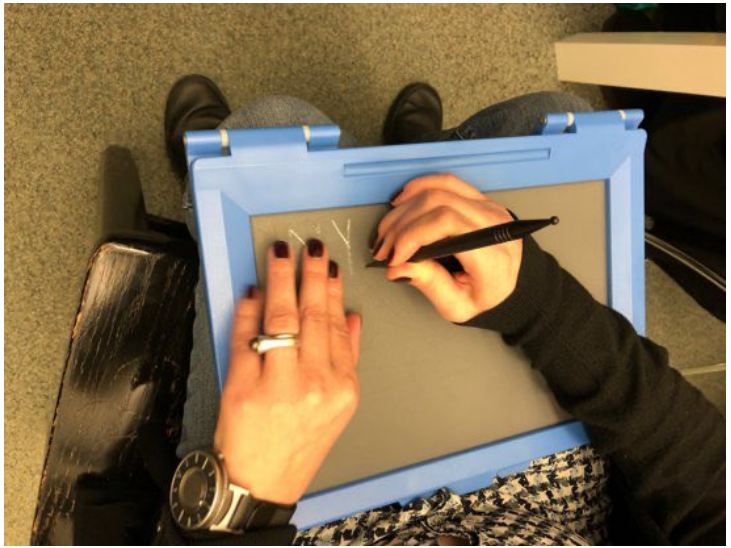




Participatory Design Sessions at The New School, New York City

Participant Observation and Visual Ethnography



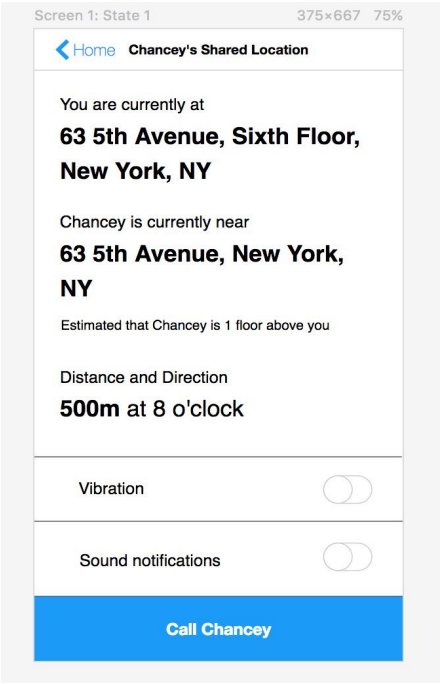


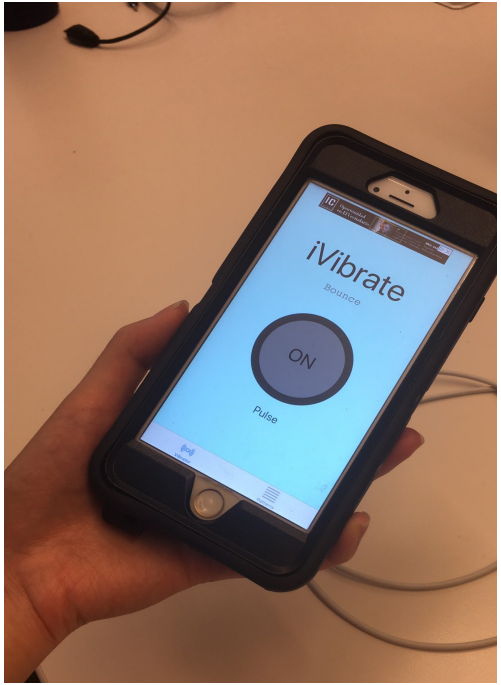


Conversations and observations with Visually Impaired Individuals in the New York Public Library (NYPL)

Co-Designing for Inclusivity and Social Interaction







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Prototyping and evaluating the user experience of mobile applications with BVI individuals

Inclusive Projects. Org

Guides Podcast About Workshops UX Counselling



Inclusive design benefits the whole population

Designing for inclusivity often means creating unforeseen benefits for everyone else. For example, audio books were created for people who are visually impaired or blind to enjoy, but now has become a mainstream and popular way to listen to a book while commuting. Inclusive design gives everyone equal access to a product and drives innovation.

Learn More



Inclusive Design Podcast • View All

Joanna Kao: Accessible Design in Media

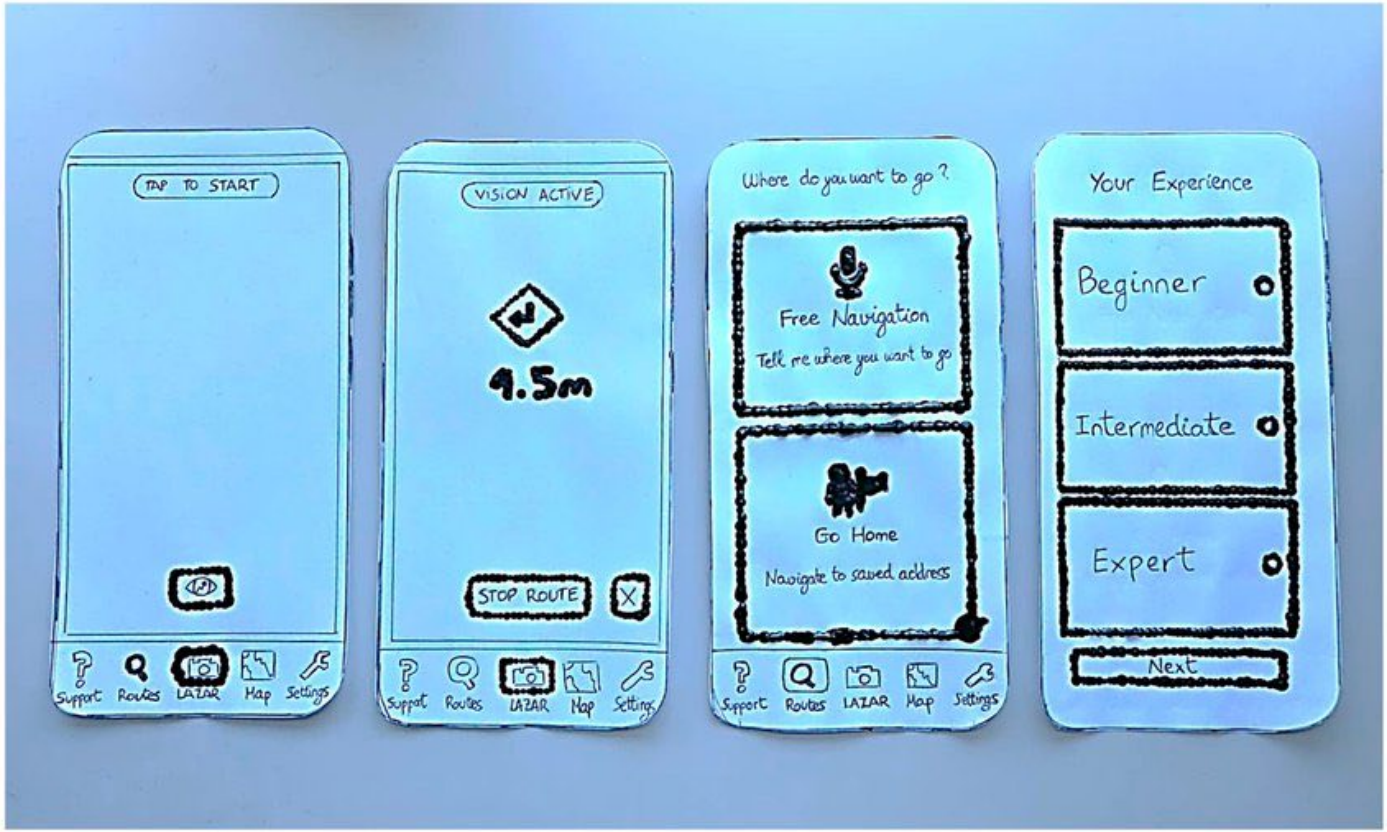
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Accessible Urban Mobility

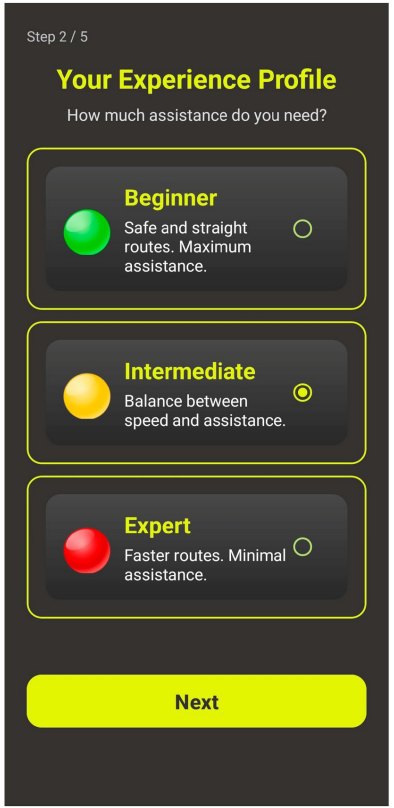
Designing Human-Centred Adaptive AI Navigation for BVI Individuals

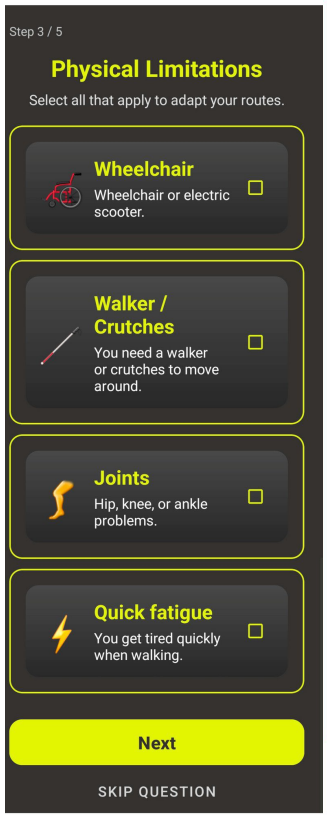
Escuela Técnica Superior de Ingenieros Informáticos (ETSIInf)
Universidad Politécnica de Madrid

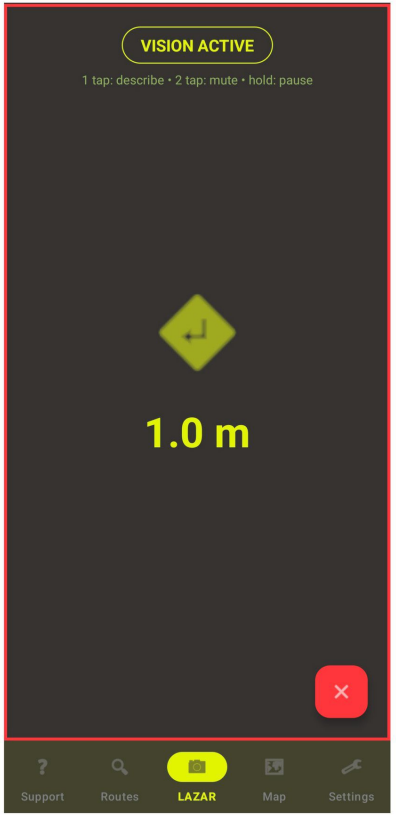
Disability Tech

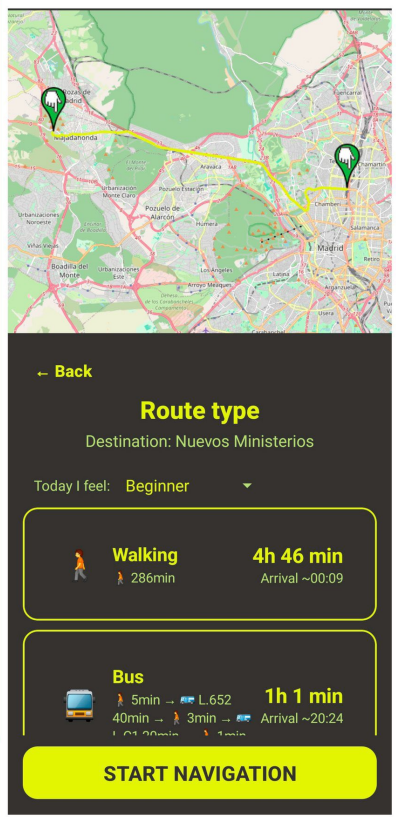


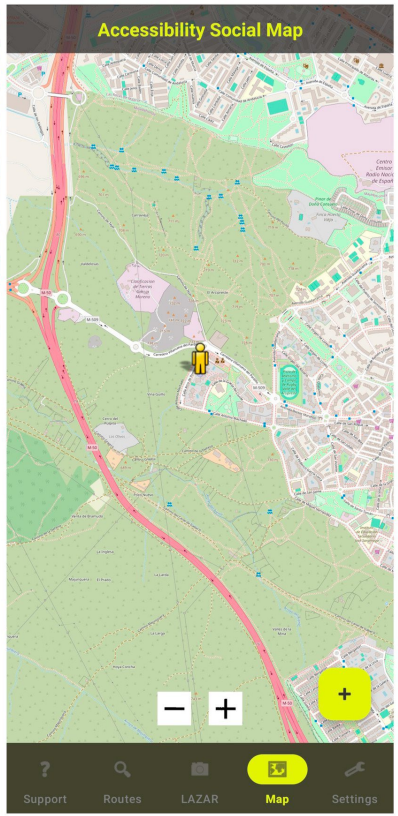
Low-fidelity paper prototype of the LAZAR application constructed using hand-drawn ink sketches on individual paper cards.





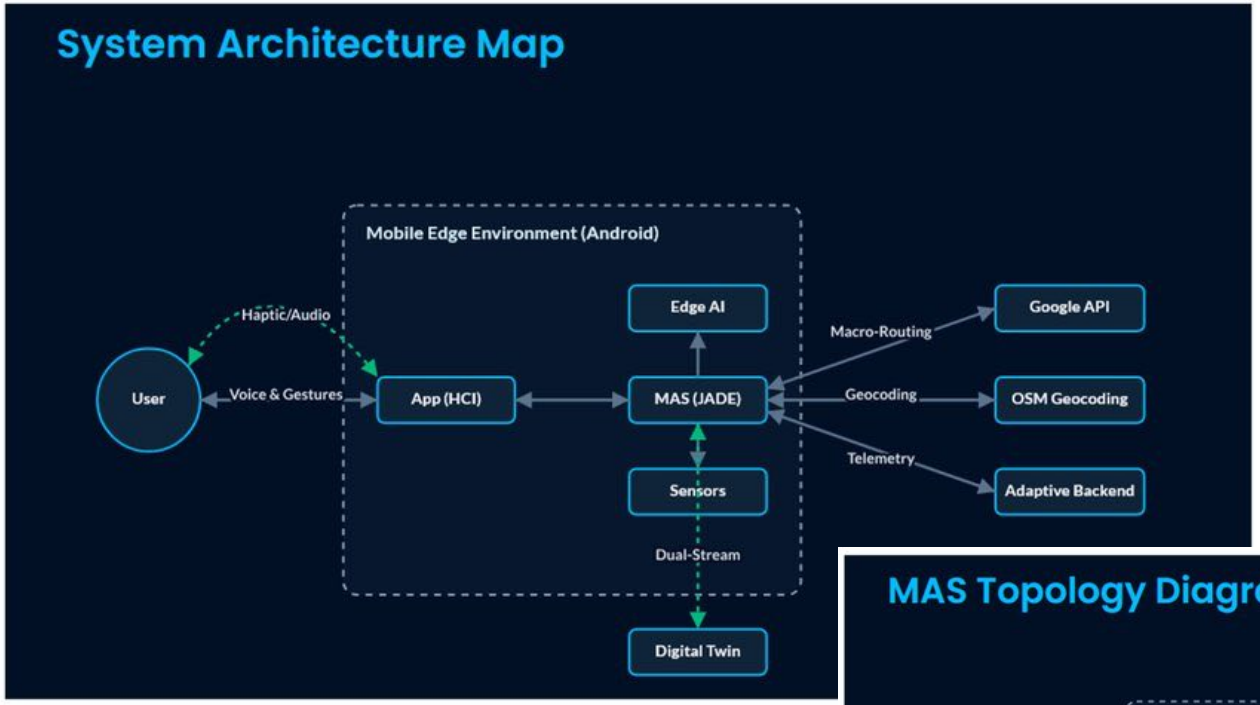




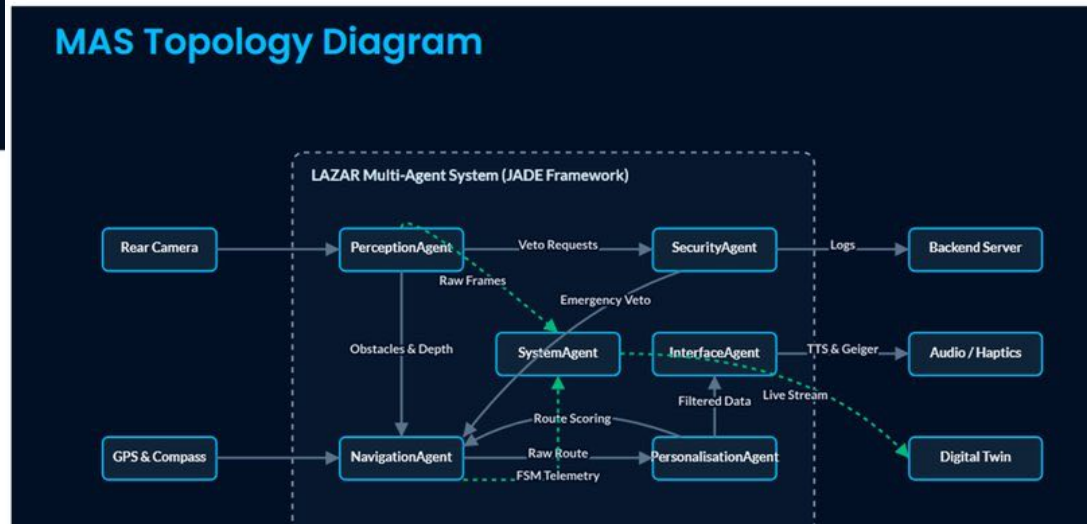


Disability Tech

LAZAR, Accessible Urban Mobility
Escuela Técnica Superior de Ingenieros Informáticos
Universidad Politécnica de Madrid



LAZAR, Accessible Urban Mobility
Universidad Politécnica de Madrid



LAZAR system structured as a modular multi-agent architecture with distinct agents responsible for perception, decision-making, interaction, and safety.

Disability Tech

Participatory Design for Creating Conversational Agents to Improve Web Accessibility

The HINT Lab, Politecnico Milano



The HINT Lab, Politecnico Milano
https://hintlab.polimi.it/projects/

CONWEB

Conversational agents (CAs) are pervading a broad range of activities, as their natural language (NL) paradigm simplifies the interaction with digital systems. They offer benefits in different situations where users may take advantage of voice-based interaction for accomplishing their tasks. Recent works are capitalising on this technology, for example to design voice-based CAs for searching the Web. However, very often CAs are seen as tools that complement the Web access experience by providing additional content, not granting access to the website content itself. There is still a lack of proposals for a full-fledged integration of Conversational AI within Web architectures.

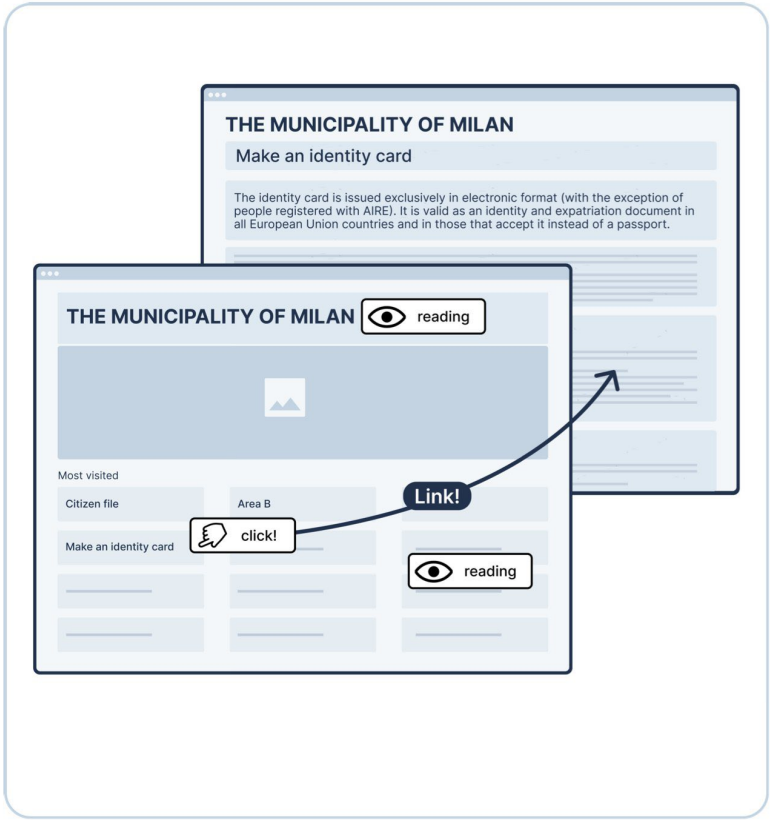
This project tries to fill this gap by proposing ConWeb, a framework for Conversational Web Browsing that responds to requirements that we identified through an extensive human-centred process involving 26 blind and visually impaired (BVI) users, along different sessions of interviews and co-design workshops. ConWeb enables users to navigate content and services accessible on the Web by "talking to websites" instead of browsing them visually, by expressing their goals in natural language and accessing the websites through a dialog mediated by a conversational agent (e.g., a voice-based browser plugin).

Awards

Google Award for inclusion research program
The Award for Inclusion Research Program recognizes and supports academic research in computing and technology that addresses the needs of historically marginalized groups globally. Launched in 2020, the Award for Inclusion Research (AIR) Program is an ongoing effort to support innovative research and professors working to create positive societal impact.

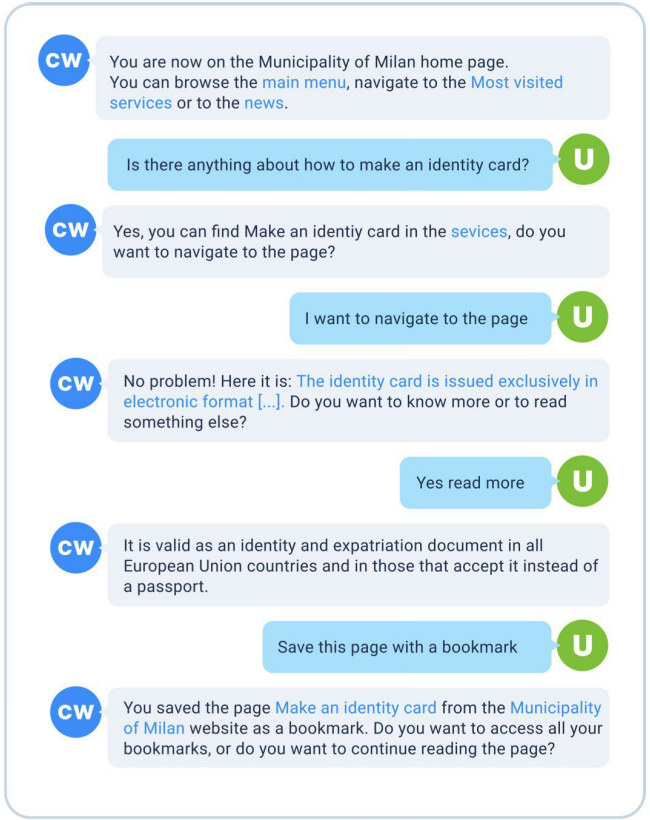
Publications

Speaking with LLMs: Co-Designing Voice Interaction Patterns with Blind and Visually Impaired Users.
Emanuele Pucci, Giulia di Fede, Michael Gilbert, Barbara Leporini, Salvatore Andolina, Maristella Matera.
International Journal of Human–Computer Interaction, 1–24.

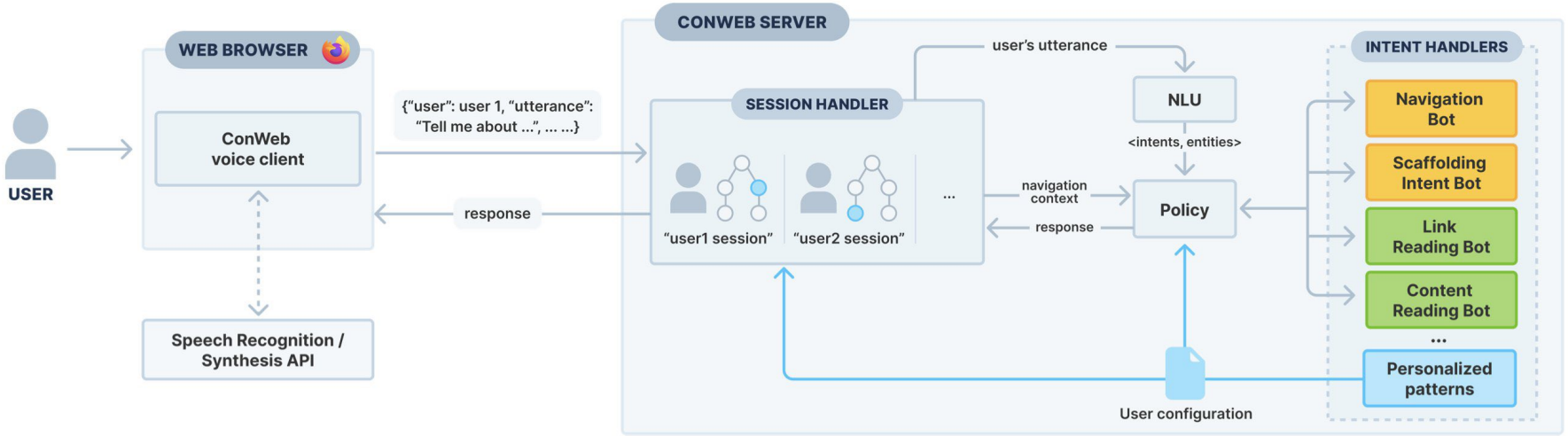


(a) Automated Web browsing actions

CONWEB MIDDLEWARE



(b) Natural language dialogue



Conceptual architecture of the ConWeb platform
The HINT Lab, Politecnico Milano

Responsible and Ethical use of AI in Inclusive Design

1. **Participatory Research and Human-Centred Design Process**
   Engaging BVI users in design research, while recognizing their distinct concerns and creative contributions towards the overall design outcomes.

2. **Adaptive Systems with Context Awareness**
   Designing systems that adapt to the complex social, physical and changing user needs is highly challenging and requires devising novel technological innovations, interoperable digital platforms, and better social practices.

3. **Privacy, Consent and Accessibility as Universal and Ethical for Inclusive Design**
   Ensuring robust privacy, informed consent and accessibility in all contexts of use, are universal and ethical design principles that also affect people interacting with BVI individuals and society at large.

Inclusive design with
shared social artifacts

Focus on creating objects, spaces, or digital systems that catalyze connection, collective human interaction, and wider usage in society.

