Modern Technologies
Revolutionizing Digital Accessibility

Maha Zouwayhed

February 27, 2024

Associate iPark Director | American University of Beirut

Overview

1   **The Current Landscape of Digital Accessibility**

2   AUB's Role in Fostering Innovation

3   ABLE Summit AUB

The Current Landscape of Digital Accessibility

Recent years have seen remarkable strides in AI, wearable technology, and smart devices, enhancing Digital accessibility in ways previously unimaginable.

- Ai Advancement in Digital Accessibility
- Ai Advancement in Assistive Technology

AI Transforming the Digital Accessibility Lanscape
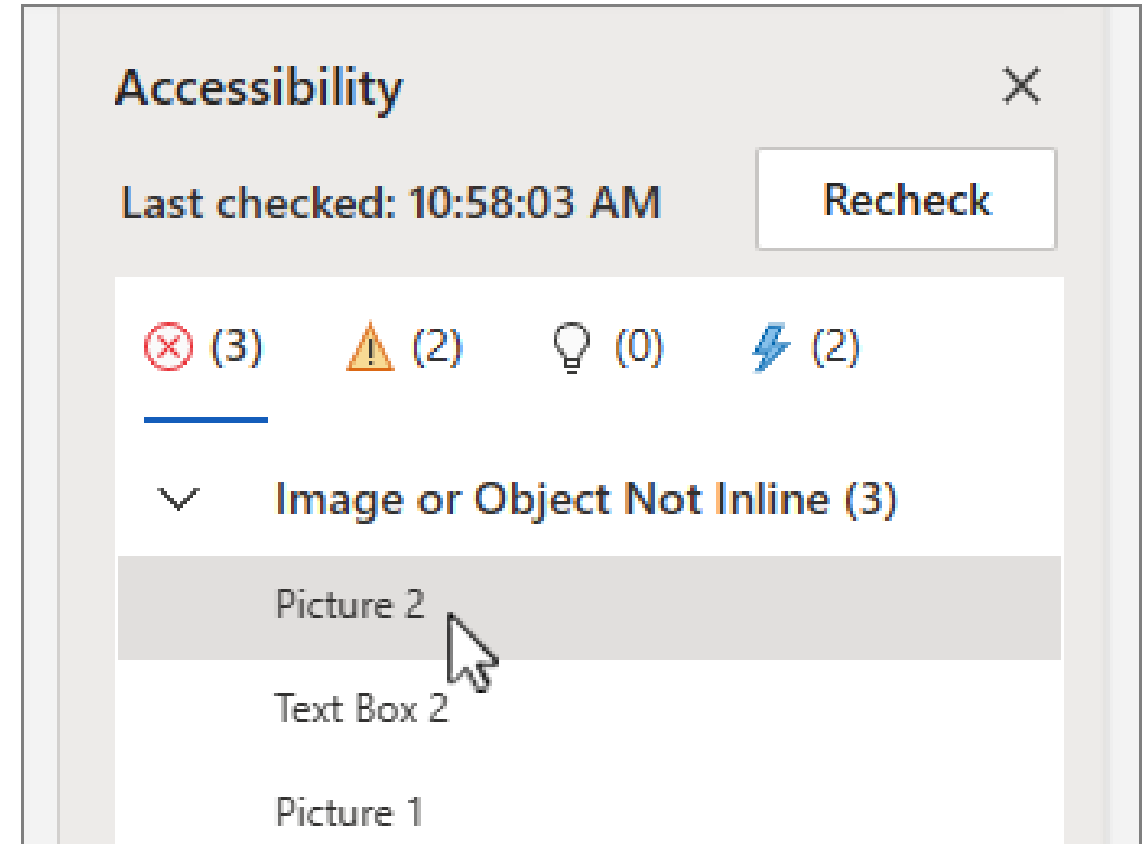
Leaders like

- Microsoft integrated AI into Office 365 suite,

- Adobe's Sensei-powered PDF Auto-Tag feature enhancing document accessibility,

underscoring a unified commitment towards a more inclusive digital world.

Microsoft AI and Accessible Documents

- Microsoft has integrated AI across its suite of products to improve accessibility features, particularly in the creation of documents, presentations, and spreadsheets.

Adobe AI (Adobe Sensei) and Accessible Documents

- **Auto Tagging for Accessibility:** Adobe Sensei powers features like automatic tagging of PDFs, which is crucial for screen reader software.

- **Enhanced Image Recognition**: Adobe Sensei improves the creation of accessible documents by providing advanced image recognition capabilities. It automatically generates alt text for images in PDFs.

- **Predictive Text and Layout Adjustment**: Adobe's AI technologies offer predictive text features and automatic layout adjustments to ensure that documents are not only accessible but also aesthetically pleasing and logically structured.

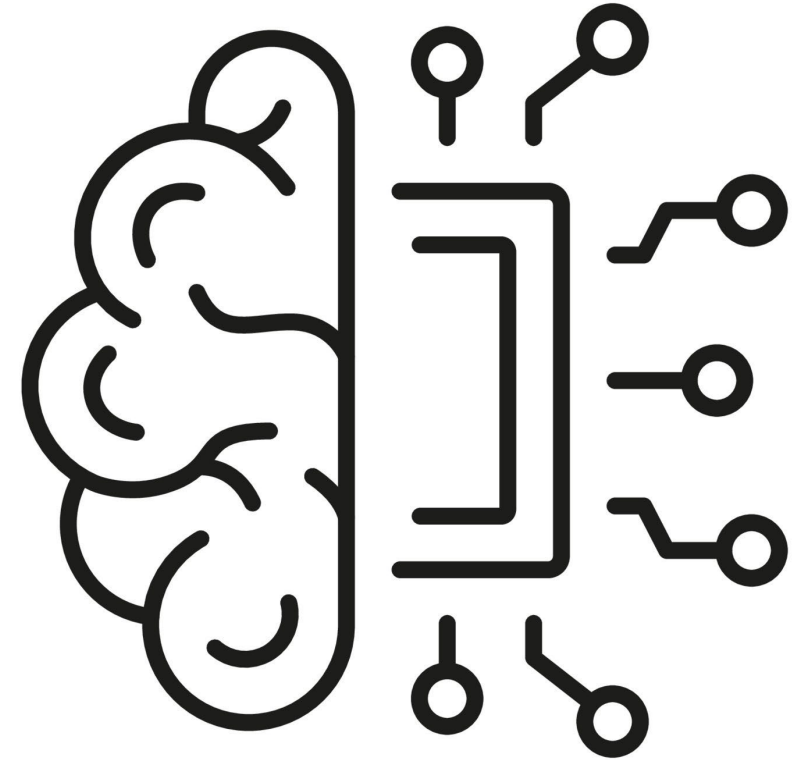# AI Advancement in Assistive Technology

AI advancements in assistive technology have led to significant improvements in accessibility and independence for individuals with disabilities, focusing on:

- Neuro-Symbolic Ai

- Ai Powered Exoskeleton

- Generative Ai

Neuro-Symbolic AI

• This hybrid approach combines the learning capabilities of neural networks with the reasoning abilities of symbolic AI, offering more adaptable and explainable AI models. For assistive technology, this could mean highly intuitive interfaces that understand and adapt to user needs in real-time.

AI Powered Exoskeleton

• By integrating advanced AI algorithms, exoskeletons can now provide more nuanced support, adapting to the user's movements and providing assistance as needed for mobility and rehabilitation, offering a new level of independence.

Generative AI for Custom Assistive Devices

• Generative AI can design personalized assistive devices by learning from a dataset of user needs and preferences, leading to custom-fit and functionally superior devices that cater to individual disabilities.

Empowering Ai For Accessibility Innovation

Student hackathons aimed to push AI and accessibility practitioners from the MENA region to provide AI-based solutions with lingual diversity for people with disabilities in

1. **Assistive Technology**

2. **Physical Aid**

2022 Hackathon In Numbers

- **11 Countries**

- **71 semi-finalists** joined from Lebanon, Syria, Algeria, India, Kuwait, Egypt, USA, UAE, Qatar.

- **46 finalists**

Winners

Team أشرلي

أشرليare proposing an **AI model that can automatically translate the Arabic Sign Language to text** with the goal of offering those with hearing impairments a chance for independent living and an easier way to integrate within the hearing communities. Our tool will start with an existing dataset from which we will extract signs in frames and use them in training and testing a neural network model. We will then evaluate the findings with competent sign language translators and enhance the model using the feedback.

Winners

Team Reach Up

Innovative education for Trisomy, right from home. Our engaging curriculum, p**owered by AI, adapts to each student's needs, ensuring progress and safety.**
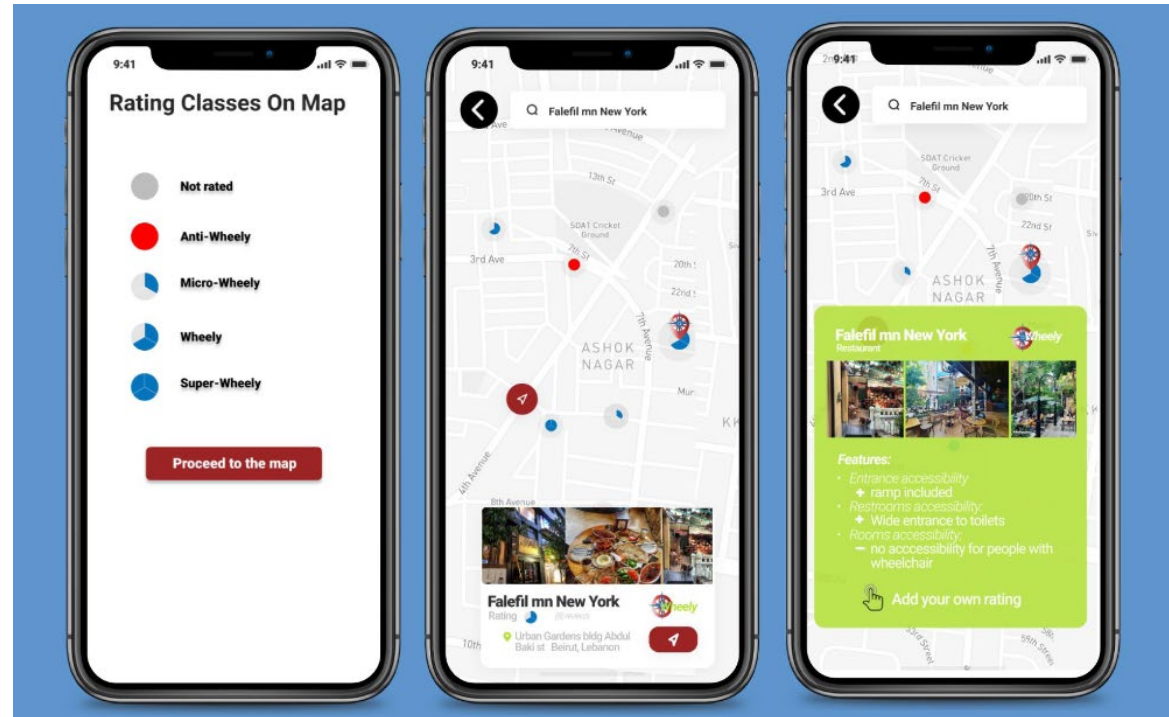
Winners

Team Wheely wheel

A revolutionary map that offers people with special needs the space to navigate places that are accessible to them based on their disability type. Wheely Wheel Team caters to a world that is customized to every person based on his/her needs.

Winners

Team The Glens

A prosthetic arm that utilizes the power of AI to bring autonomous action capabilities is the next step in creating a more accessible world! It includes a camera that uses Computer Vision object detection algorithms to associate objects that can be grasped.

Tech For Accessibility Hackathon 2023

The **"Tech for Accessibility"** Hackathon aimed to attract diverse backgrounds and skillsets to collaborate and innovate solutions for improving accessibility for people with disabilities. The majority of the solutions came AI-based in the following tracks:

1. **Assistive Technology and Universal Design**
2. **Augmented Reality for Accessibility**
3. **Accessibility testing and Remedy tools**
4. **Faculty of Arts and Science Coding Challenge**

![American University of Beirut]

2023 Hackathon In Numbers

- **9 Countries**
- **96 semi-finalists** joined from Lebanon, Sweden, Iraq, Egypt, USA, UAE, France, Qatar.
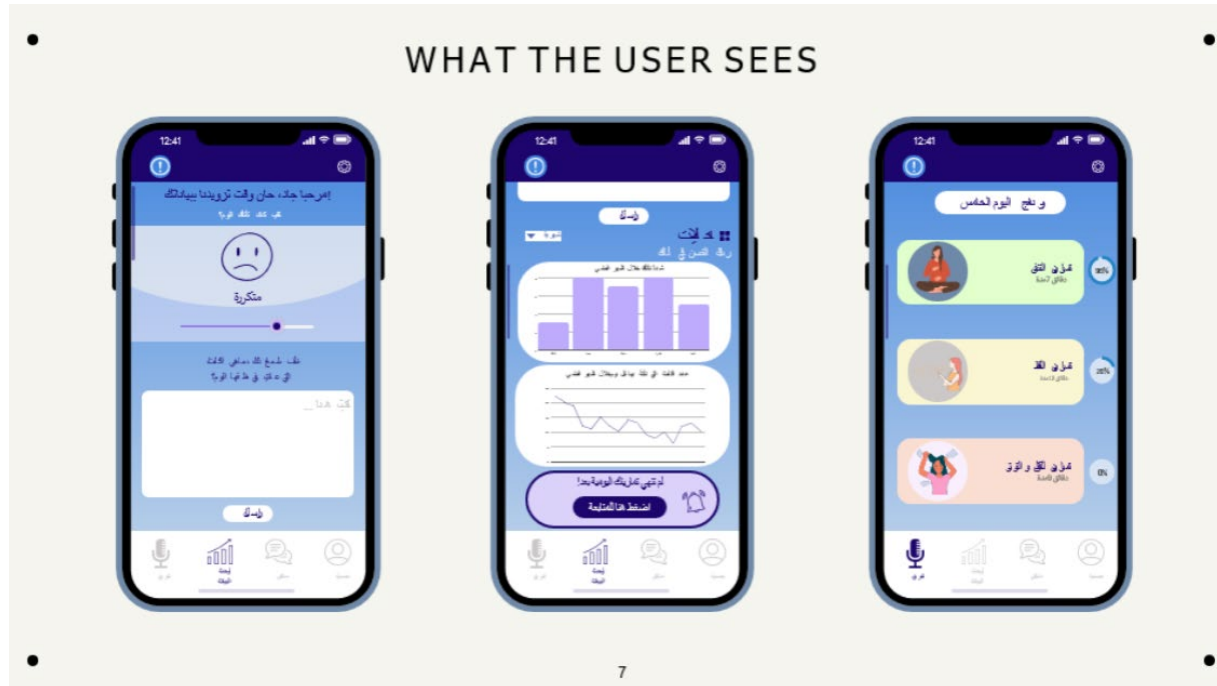- **48 finalists**

Winners

Team KalAmI

AI-Enabled speech therapy mobile application, designed to revolutionize stuttering therapy for Arabic-speakers in the Middle East. KalAmI aims to provide personalized, accessible, and cost-effective speech therapy, making a significant impact on the lives of many individuals.

Winners

Team True Vision

innovative glasses harness the power of AI to identify and describe the world around you, providing real-time auditory cues from live video input. With our smart eyewear, the visually impaired can navigate with confidence, recognize faces, read text, and so much more.
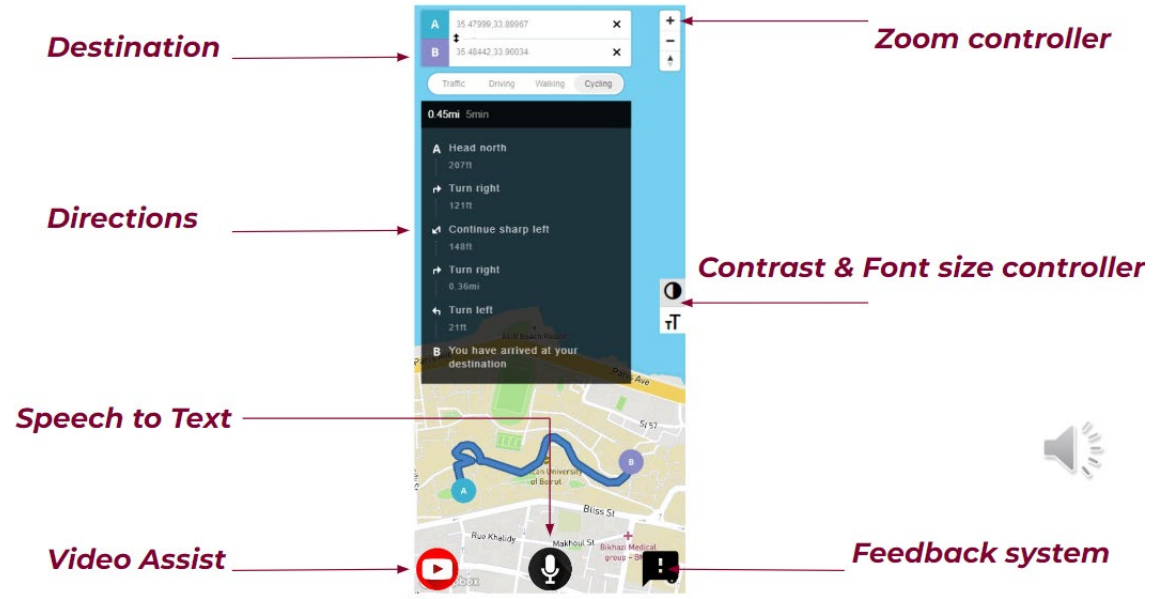
Winners

Team VisionSafe

Vision Safe offers Real-Time Object Identification, Pathway Navigation, and Safety, along with Personalized Assistance and Accessibility. Instantly recognize and describe objects, ensure hazard-free navigation across urban environments, and individualize the app for a more inclusive experience.

Winners

Team Navigatable

created an MVP for a web or mobile solution
that generates an accessible routing for
Persons with disabilities.

Capacity Building

ABLE Summit

ABLE Summit is the 1st of a kind event in Lebanon and the region, shedding the light on **Digital Accessibility in Higher Education.** It is a national-level ripple effect event, featuring renowned speakers from global leading organizations in the industry to boost awareness, charge collective momentum, and to trigger related initiatives.

ABLE Summit
AT Exhibition

Exhibitors use this platform to demonstrate their latest products and services, allowing attendees to interact with them firsthand, ask questions, and learn about their functionalities and applications. Whether it's exploring the capabilities of a new software platform, witnessing a live demonstration of a state-of-the-art gadget, or learning about groundbreaking research initiative

ABLE Summit Workshops

Technical Workshops, where we are dedicated to building capacity covering the pillars for implemneting digital accessibility. Training students and professionals through immersive learning experiences and cutting-edge demonstrations.

- E-accessibility

- Governance & Sustainability

- Student Success

- Employability

Next steps

- Capitalizing on the funding and research opportunities to use modern technologies to enhance digital accessibility solutions

- Imbedding accessibility compliance in the professional development core structure and professional standards

- Materializing and activating the community of practice forming in the region

- Availing global professional standards in Arabic and align terminologies to enable knowledge transfer

- Public knowledge-base and online training