



**Together
Inclusive**



Artificial Intelligence- Integrated Assistive Technology for Persons with Disabilities- Benefits & Drawbacks

#Second_Reading_Group
June 4, 2025

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Content

This presentation covers:

- 1) Definitions of Artificial Intelligence and Assistive Technology
- 2) AI Daily Uses by Persons with Disabilities
- 3) AI in Education for Persons with Disabilities
- 4) AI in Workplaces for Persons with Disabilities
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An open book lies on a wooden desk, its pages slightly curved. In the background, a small potted plant with green leaves is visible on the left, and a pen holder with pens is on the right. A semi-transparent blue overlay covers the entire image, and a solid red rectangular box is centered over the open book, containing the title text in white.

Definitions of Artificial Intelligence and Assistive Technology

Artificial Intelligence (AI)

The science and engineering of designing machines that exhibit intelligent, human-like behaviour.

AI is utilized in various capacities, ranging from personal assistants to self-driving cars.



Automated Task Manager



Crafting Presentations



Research Assistant



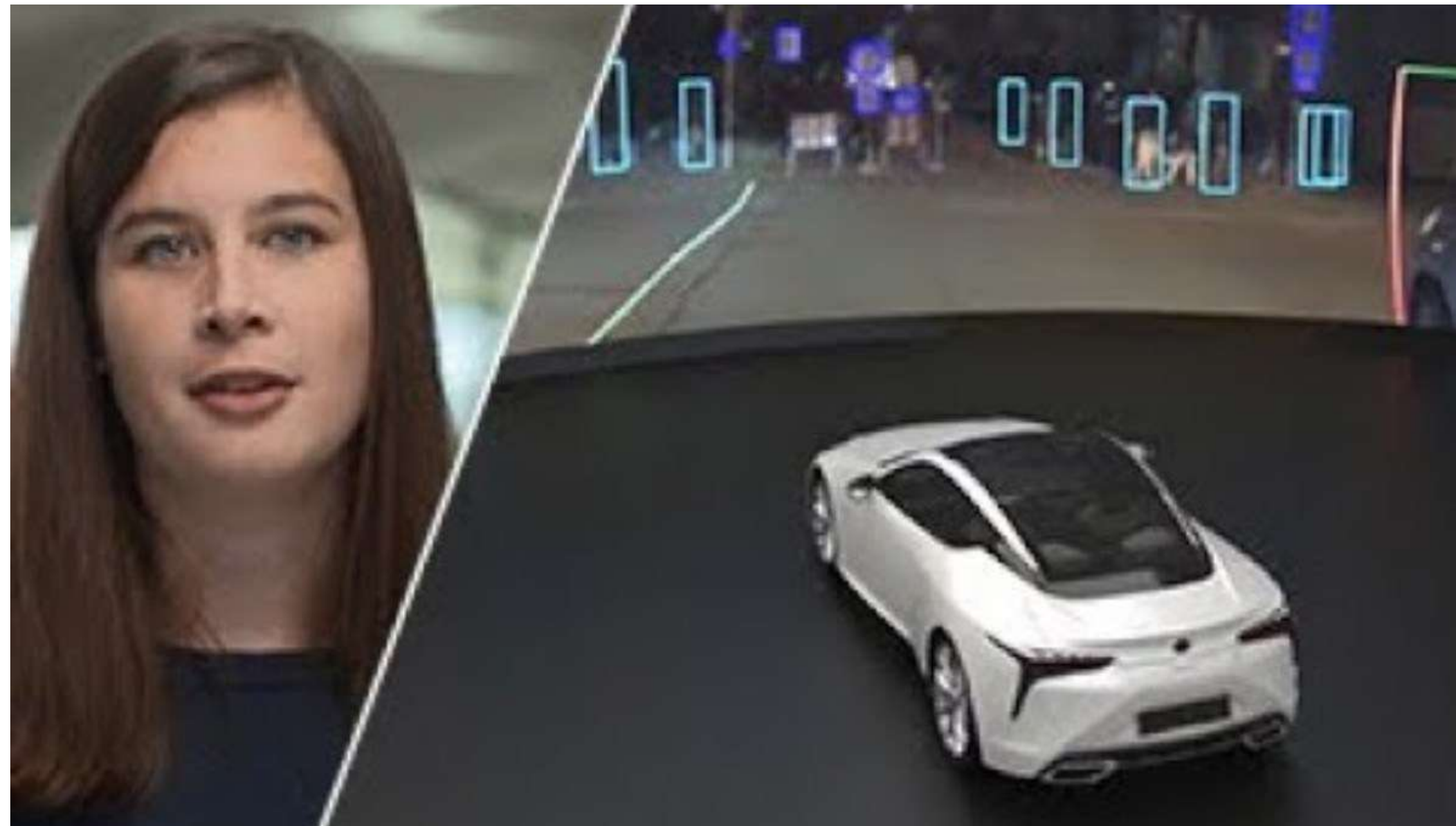
Optical Character Recognition (OCR)



Note Taker

Self-Driving Cars

AI and the Future Series, Episode 4: Self Driving Cars with NVIDIA's Katie Burke

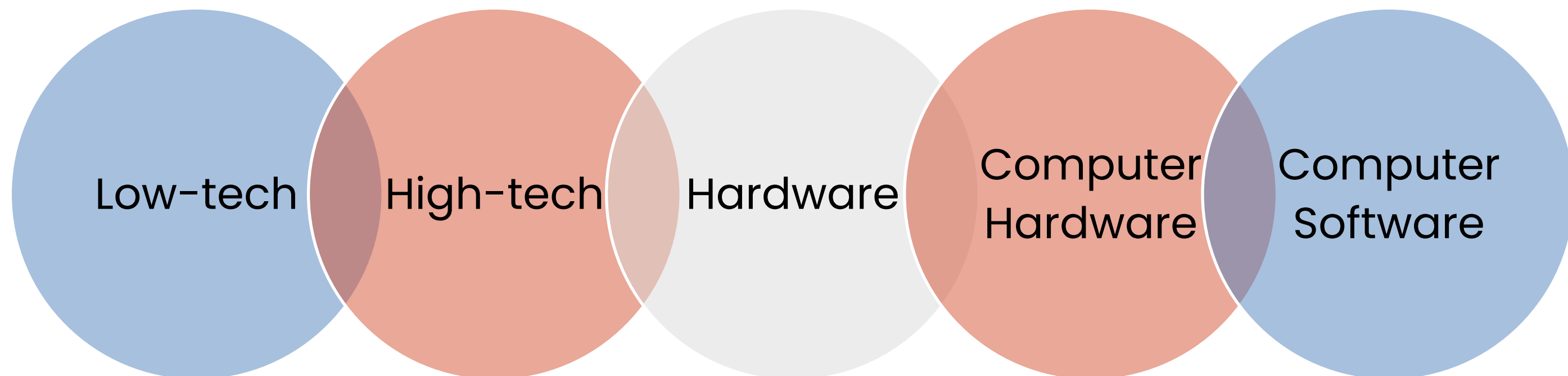


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Assistive Technology (AT)

It is any item, piece of equipment, software program, or product system that is used to increase, maintain, or improve the functional capabilities of persons with disabilities.

Assistive Technology can be:



How does AI help persons with disabilities?



AI-Integrated Assistive Technology

It **combines artificial intelligence with assistive tools** for persons with disabilities to make them smarter and easier to use.

It aims to **shift from static, one-size-fits-all devices to dynamic, intelligent systems** that can learn, adapt, and personalize support for persons with disabilities.

A man with a beard and curly hair, wearing large black headphones, is seated in a wheelchair at a desk. He is smiling and looking at a laptop. The background is a blurred office setting. Several circular icons are floating around him, connected by dashed lines, representing various AI accessibility features: a tablet with communication icons (chat, call, play, book, image, settings), a speech-to-text icon (head with sound waves), a hand holding a smartphone with a microphone and audio waveform, a vision icon (eye with a slash), a smart speaker (Google Home), a text-to-speech icon (speaker with sound waves), a text-to-speech icon (tablet with 'Aa' and 'Tt'), and a person icon (stick figure) above a document scanner.

AI Daily Uses by Persons with Disabilities

AI Daily Uses for PWDs

AI has now become part of our daily activities, from Internet of Things Technology (IoT) to assistive chatbots



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AI-Powered Guide Dogs

Blind and partially sighted people may soon be helped to find their way around indoors by robot guide dogs.



Watch the
[Video](#)

Amazon Echo

A tool that is similar to Alexa, that is related to smart home control.



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Google DeepMind

Sign Language-to-Text (SL2T) AI Real-Time Translation



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Be My Eyes



Bringing Sight to Blind and Low Vision People

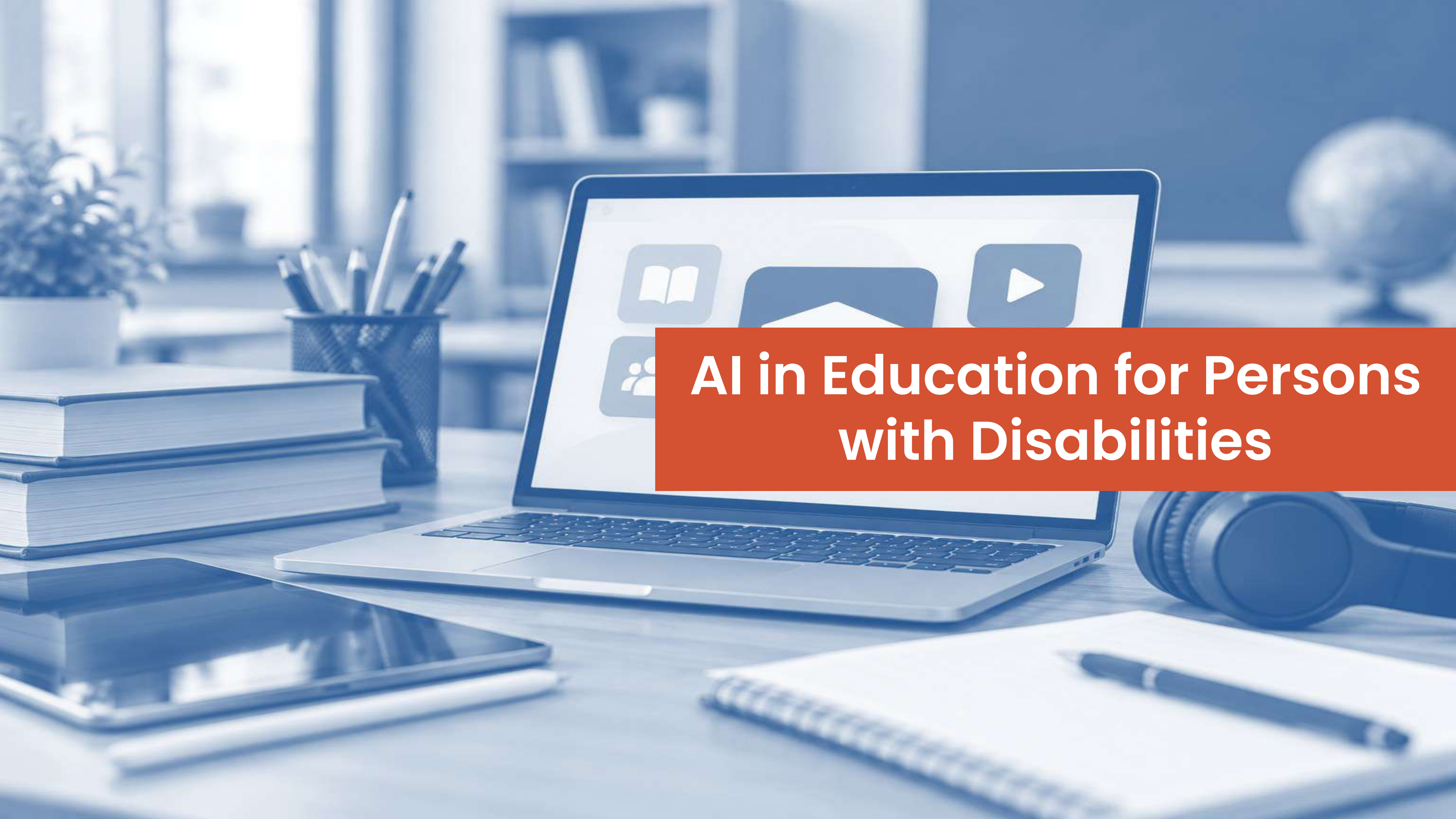


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Be My Eyes Accessibility with GPT-4o



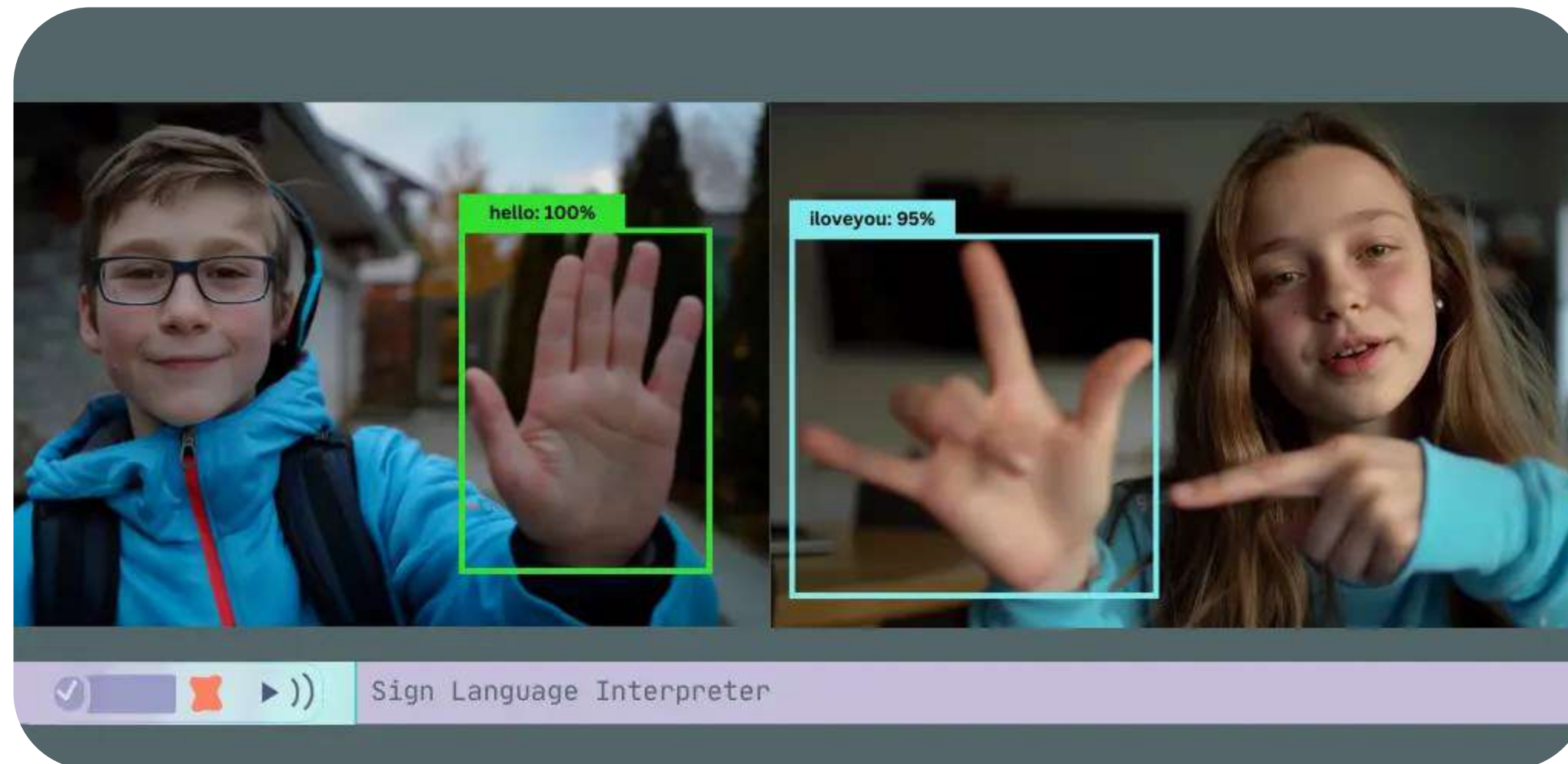
Watch the
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A laptop sits on a desk in a study or office environment. The laptop screen displays four icons: an open book, a graduation cap, a play button, and a group of people. A red rectangular box is overlaid on the right side of the screen, containing white text. In the foreground, there are stacks of books, a pen holder with several pens, a smartphone, a spiral notebook, and a pair of headphones. The background is slightly blurred, showing a bookshelf and a window.

AI in Education for Persons with Disabilities

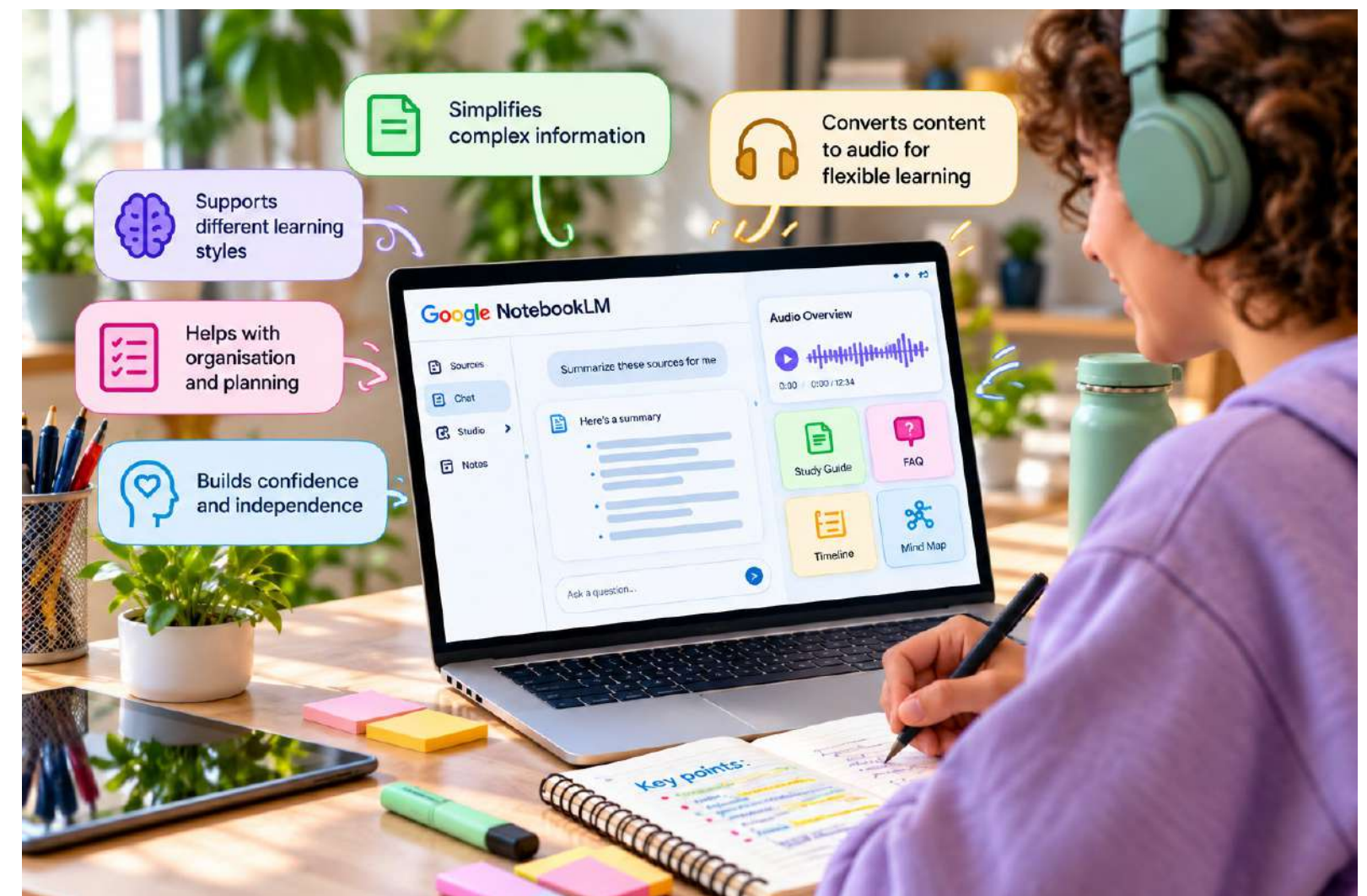
AI-Driven Accessible Education

AI helps advance inclusive education by offering personalized tools and solutions, improving communication, and increasing involvement among students with disabilities



Examples: Google NotebookLM

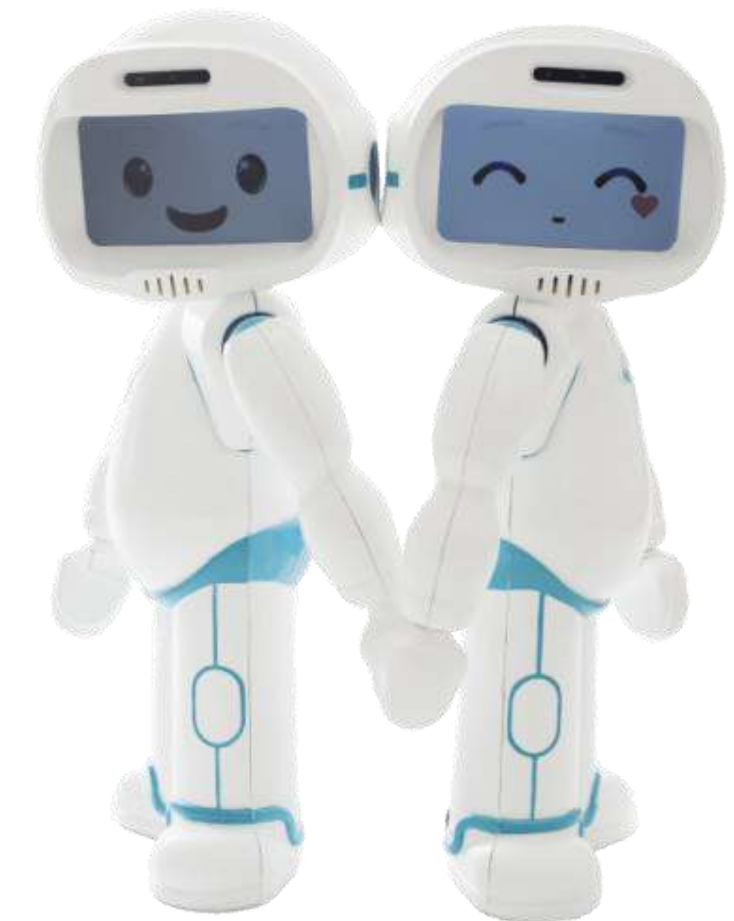
- Upload PDFs, websites, YouTube videos, audio files, Google Docs, or Google Slides, and NotebookLM will summarize them and make interesting connections between topics.
- Helping neurodivergent students, such as dyslexia, ADHD, and autism spectrum disorder, learn better, and helping people who are visually impaired read articles/books for them.



Examples: QTRobot by LuxAI



QTRobot delivers evidence-based, milestone-driven autism therapy through engaging, interactive robotic sessions, enhancing autism intervention by fostering independent learning and consistent skill generalization.



Examples: QTRobot by LuxAI



QTrobot is an expressive social robot developed to assist autism professionals in helping children with autism spectrum disorder to learn new social, emotional and communicational skills.



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Examples: Dot Pad!

• dot ::

New Touch Technologies Bring Screen Time to the Blind
Tactile displays on devices could help level the playing field for students.



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**Can AI truly offer
personalized learning
without amplifying
existing biases?**





AI in Workplaces for Persons with Disabilities

Assistive Technology Supports Employment

The use of assistive technology has expanded significantly, improving employment and daily living for persons with disabilities and broader populations.

Assistive technology supports PWDs' employment, **yet limited representative evidence exists on its impact on pay, retention, and job outcomes.**

Virtual Meeting & Collaboration Platforms

Most of the tools that we use at work are accessible for Persons with Disabilities, easy to navigate, recognizable for screen readers to read, and include captions and description generators.



Microsoft Teams



Google Meet



Turn on transcriptions and captions



Spotlight a video



Reduce distractions



Accessible chat and channel messages

Zoom Accessibility Settings



Watch the
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Microsoft Teams Accessibility Settings



Microsoft Teams

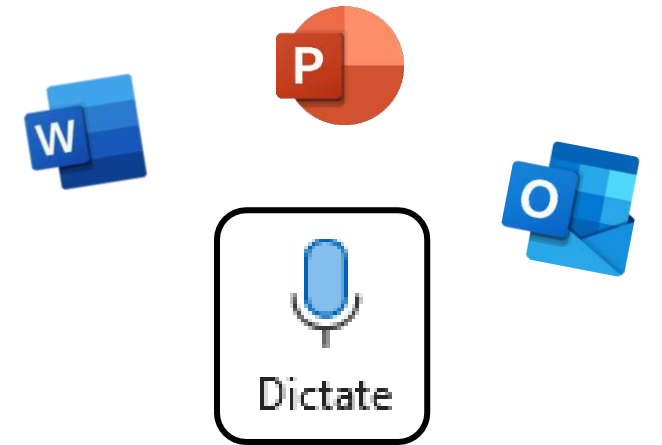
Microsoft Teams tip

**Make meetings more
accessible and inclusive**

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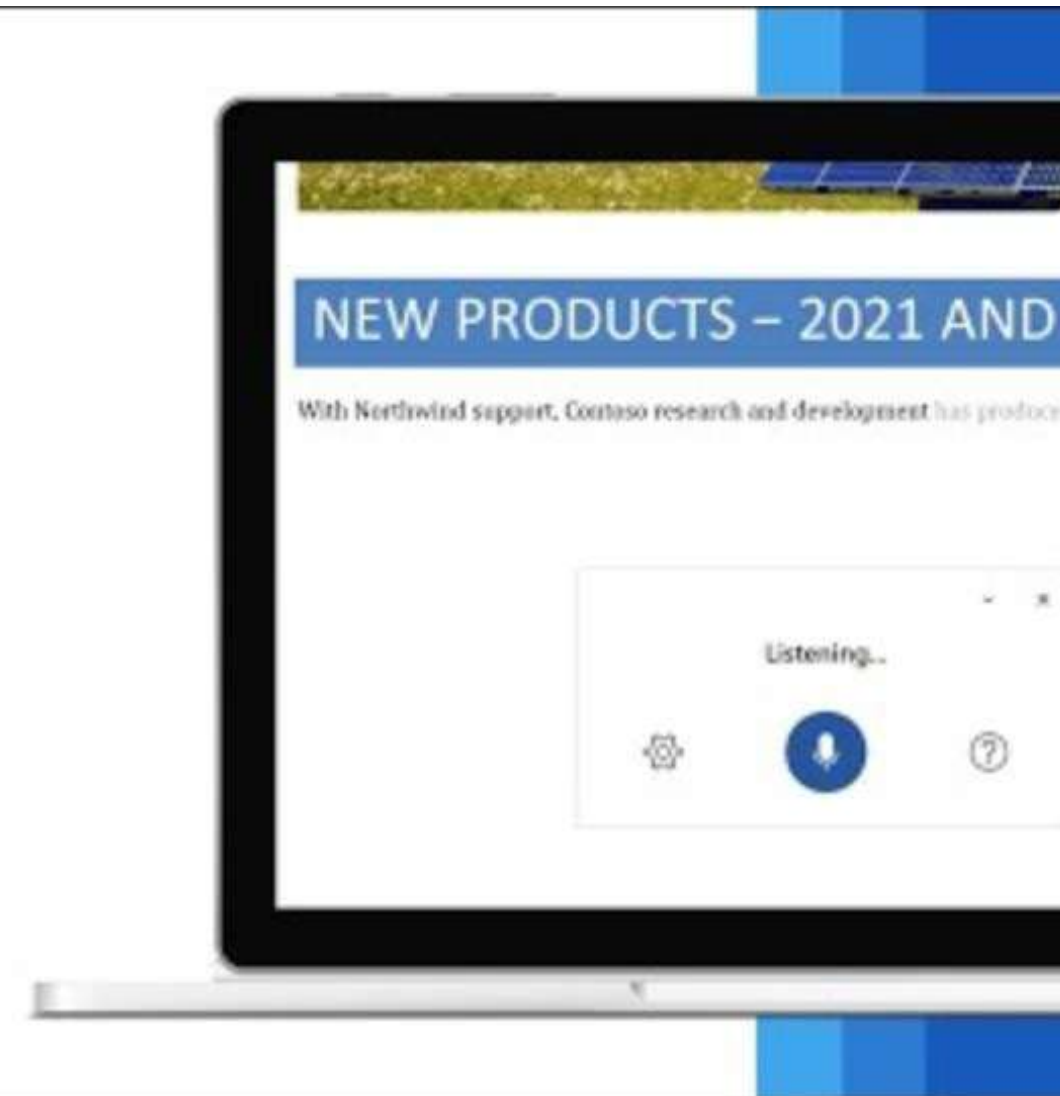
Microsoft Dictate

A tool provided by Microsoft that helps the user, depending on the microphone, start detecting the user's voice and convert it to text, especially helping persons with upper mobility or visual impairment.

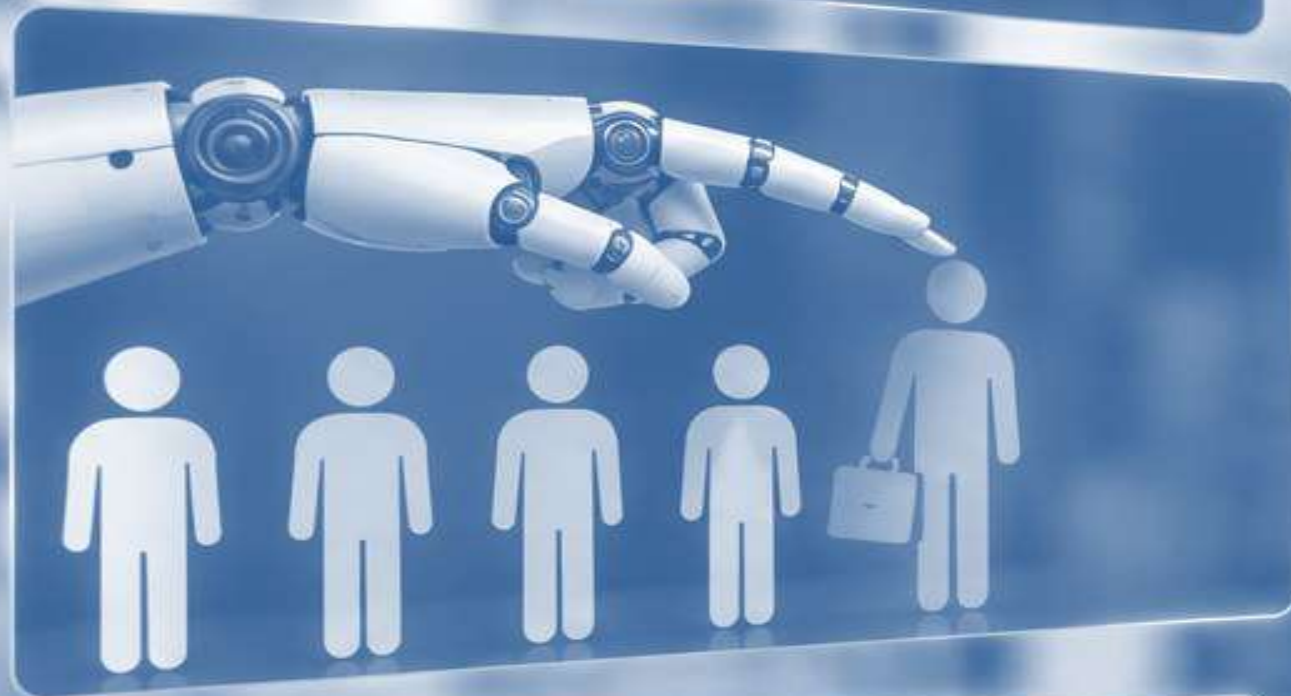


Microsoft Dictate

Say it with
Dictate



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AI-Related Drawbacks for Persons with Disabilities



Concerns with the “AI as Cane” Metaphor

- The metaphor oversimplifies the cane, ignoring its cultural and political significance as a symbol of autonomy—not just support.
- **Framing AI as a “cane” reinforces ableist assumptions that disability is a deficit to be fixed by technology.**
- Real canes empower users, while **AI can disempower through unreliable outputs and reduced human agency.**
- In education, AI can diminish both student and teacher control—contradicting the metaphor’s intent of support.

(Atef & Bali, forthcoming)

AI and Inequity: How Technology Reinforces Exclusion

- Even without explicit bias, **AI systems amplify past discrimination by optimizing historical patterns.**
- Marginalized groups, including persons with disabilities, face a stark choice: adapt to unfair systems or risk exclusion.
- Structural inequality is embedded in norms like efficiency, popularity metrics, and majority logic.
- AI removes human judgment, reducing flexibility and reinforcing systemic disadvantage.

Case Study: ChatGPT is biased against disability, but it can improve

- In 2024, University of Washington Researchers found that **ChatGPT ranked resumes mentioning disability-related awards lower than identical resumes without them.**
- When explaining its rankings, ChatGPT produced biased assumptions about people with disabilities.
- For example, **it suggested that an applicant with an autism leadership award had less leadership experience, reinforcing stereotypes that people with autism aren't good leaders.**
- Adding instructions to avoid ableist bias significantly reduced discrimination for most disability groups, but only 3 ranked higher than resumes that did not mention disability.

Privacy Concerns for Visual Assistance Technologies

- People with visual impairment cannot independently validate the content of the images and videos before they share them, and **their visual data commonly contains private content.**



Inaccuracy of Auto-generated Captions

- Automatically generated captions, often only 60–70% accurate, can distort meaning and hinder accessibility, especially for students relying on them for video content.
- **Studies show that AI-generated captions have accuracy rates of around 89.8 – 93%, but under perfect conditions.**
- Human review is still needed to ensure captions are accurate and complete.
- **AI captioning is more likely to make mistakes when videos include Background noise, Different accents, Technical or industry-specific terms, Cultural references, and Emotion, humor, or sarcasm.**
- Accurate captions are essential to ensure equal access to information, especially for persons with hearing impairment.



Recommendations

Recommendations for Policymakers

**Integrate
digital
accessibility
into national
AI strategies
and plans**

**Mandate
compliance
with digital
accessibility
standards
(e.g., WCAG)**

**Support R&D
in AI-
integrated
assistive
technologies**

**Fund assistive
technology
initiatives and
ensure
governmental
support**

**Establish
oversight
bodies to
enforce
inclusive
digital
policies &
ethics**

Recommendations for Digital Technology Developers and Producers

Adopt accessibility-by-design from early development stages

Test with persons with disabilities to ensure inclusive usability

Integrate intelligent AI interfaces like voice navigation and text-to-speech (TTS)

Provide open APIs for assistive tech integration

Train tech teams on inclusive design best practices

Recommendations for Persons with Disabilities

**Explore AI tools
such as screen
readers, text
generators, and
recognition
systems**

**Engage in solution
development
through feedback
and user testing**

**Build digital skills
to increase
independence in
daily life and work**

**Advocate for fair
access by
communicating
with responsible
entities**



Reading Resources

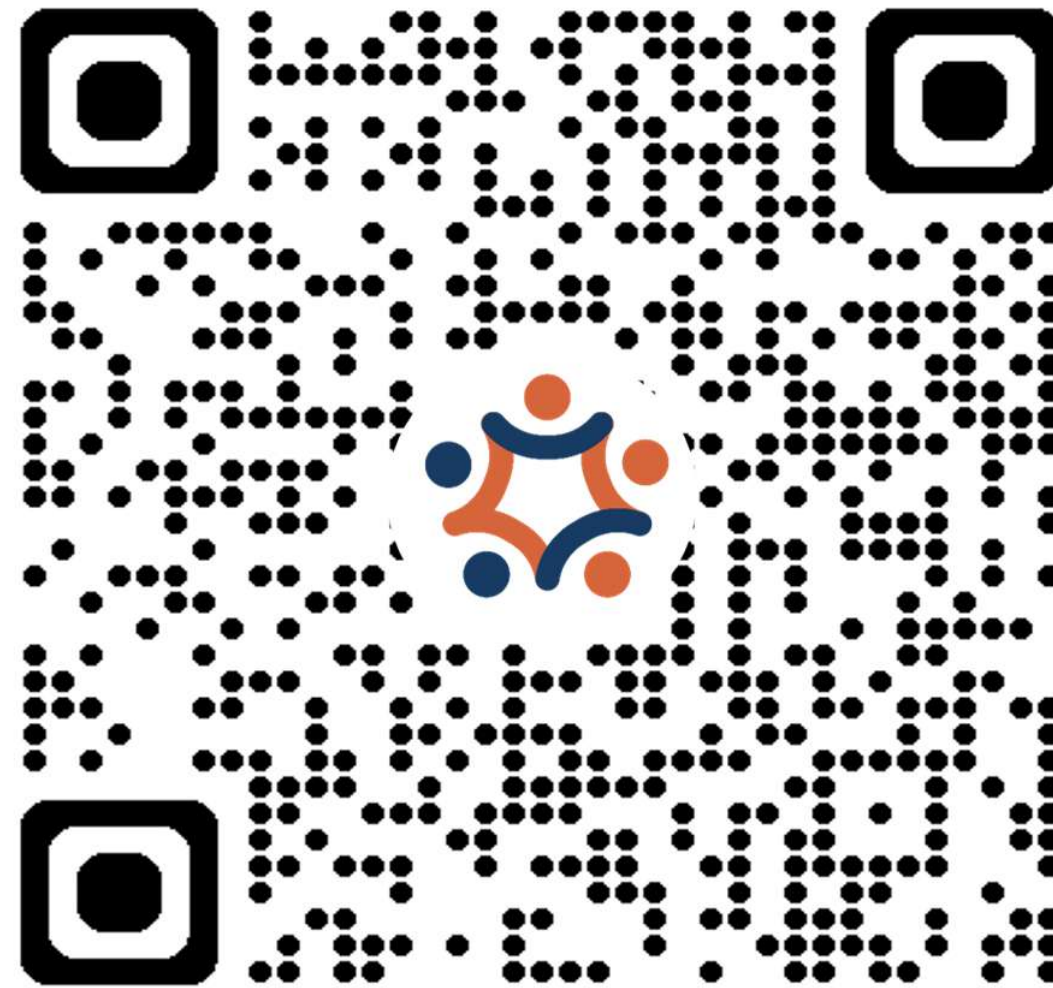
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Reading Resources

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Thank You



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