



SWARM.



Digital Accessibility & Compliance

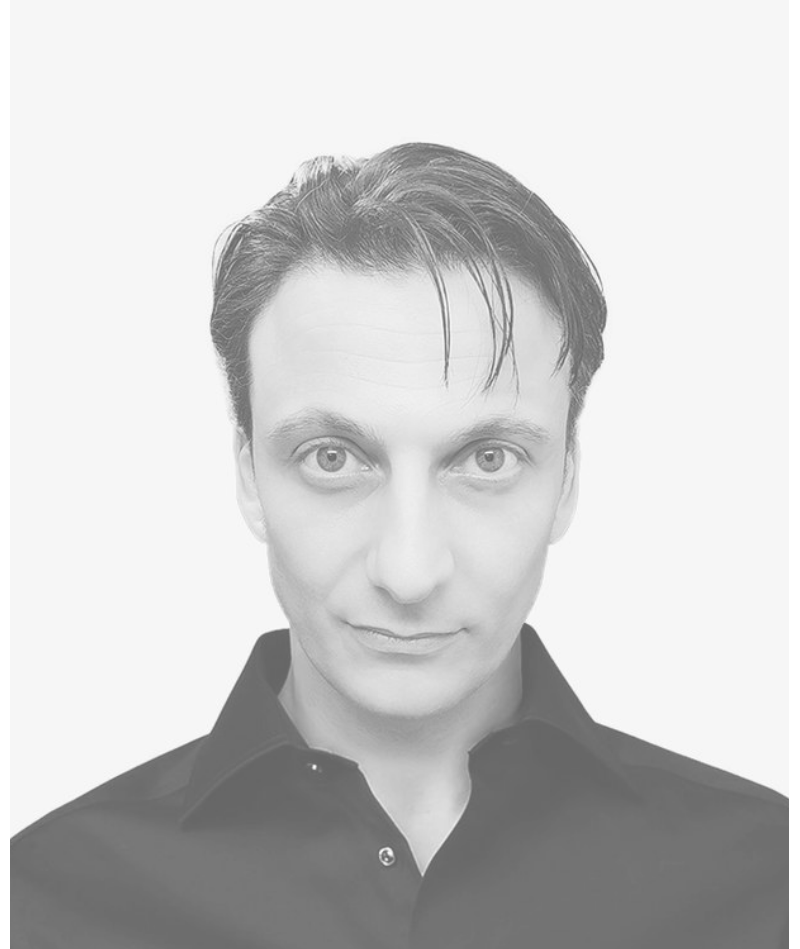
Joseph Mercieca

I am a researcher and designer (product, service, UX/UI) certified by the Design Professionals of Canada (DesCan). Worked at companies like Fit Analytics (formerly part of SNAP INC.), F-Secure Corp., and Webtrends. **Been actively advocating accessibility and inclusive design since 2018.** Also worked as a learning facilitator providing assisted learning to 10-year old kids with ADHD, Autism, and Dyslexia in 2008.

LinkedIn: [linkedin.com/in/jomrca/](https://www.linkedin.com/in/jomrca/)



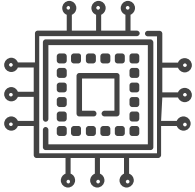
Design Professionals of Canada





Context

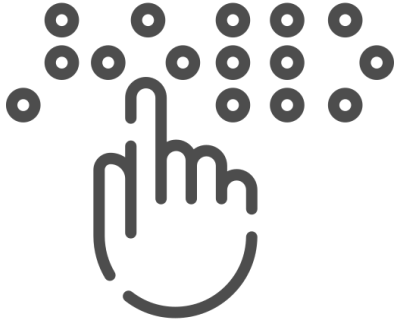
As technologies are becoming ubiquitous, people, including those with disabilities are increasingly relying on these, to manage daily tasks like finances, emails, ordering online, & seeking assistance.



Consequently...

Technologies evolve so rapidly that accessibility & fundamentals such as ethics, are often deprioritized. As a result, barriers are unknowingly introduced in technologies which exacerbate disabilities (i.e. when a person is unable to operate an item).

What is accessibility?

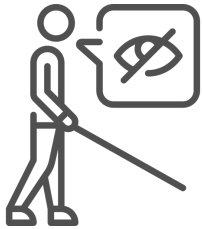


Accessibility (A11Y) represents a **mismatch** between systems and human interaction due to barriers impeding system usage by individuals (based on the Social model of disability).

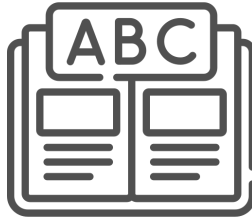
Mission

To level equity by eliminating barriers resulting in a **match** between people and systems.

Match vs Mismatch (a scenario)



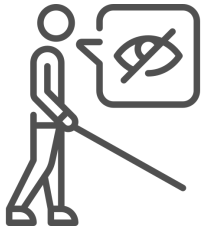
Book in standard text



Mismatch (disabled)

The blind person cannot read.

Barrier is enforced.



Book in Braille text



Match (enabled)

The person can read by touch braille text (*elevated dots on printed paper*).

Barrier is eliminated.

Estimates



16% of the global population
have a disability.
(WHO, 2022)

US ~ 27% (est.) of the population
have a disability.
(Centers of Disease Control and Prevention, 2023)

EU ~ 27% (est.) of the population
have a disability.
(consilium.europa.eu, 2022)

These figures keep increasing...



Therefore...

As tech innovators, we have a duty to deliver compliant solutions that everyone can use effectively, regardless of their limitations, thereby ensuring equity.

A11Y - Guiding principles (POUR)

To ensure equity and inclusion, solutions must be designed by adhering with **4 core principles** encapsulating Accessibility, which are:

Perceivable

Users should identify content and UI elements via their senses (e.g. visual, auditory, touch).

Operable

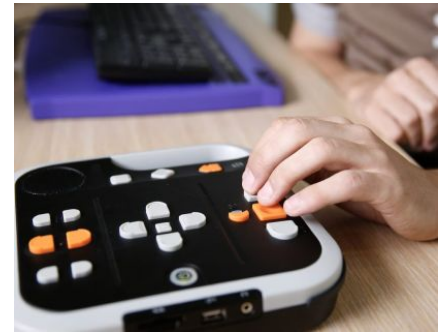
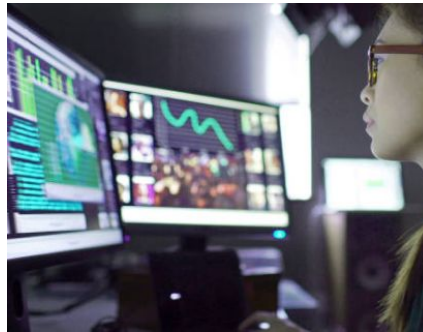
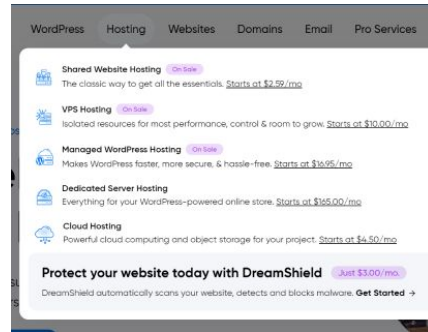
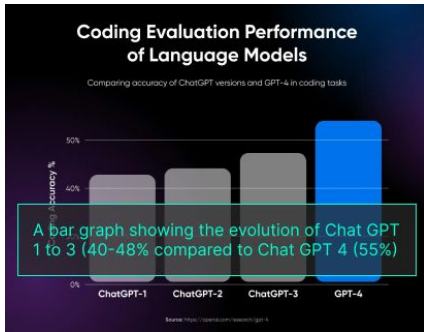
Users should be able to operate the product via controls, navigation, buttons and interactive elements.

Understandable

Functions, features, and content should be easy to learn, understand and remember.

Robust

Solutions and content must be robust to be accessed via user agents (desktop, mobile) and assistive technologies.

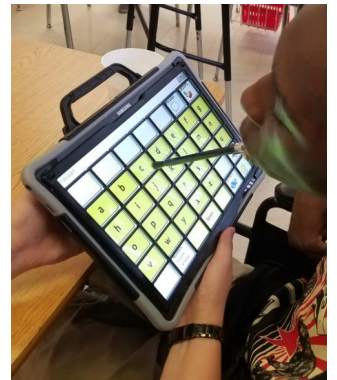
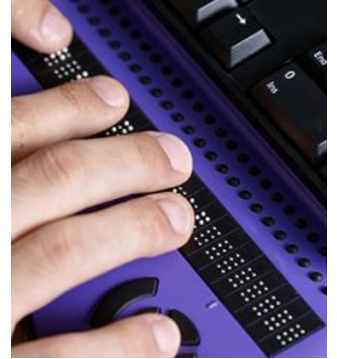
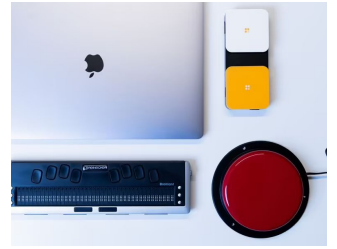


Assistive Technologies (AT)

People with special needs rely on assistive technologies to perform tasks that might otherwise be difficult or impossible.

Examples include - screen readers, braille devices, adaptive switches, mouth pieces, and even smart AI apps like **Be My Eyes**, **Seeing AI** and more.

Thus, digital solutions we create, such as - websites, apps, and conversational interfaces must be built to fully operate with assistive technologies.





Please bear in mind that...

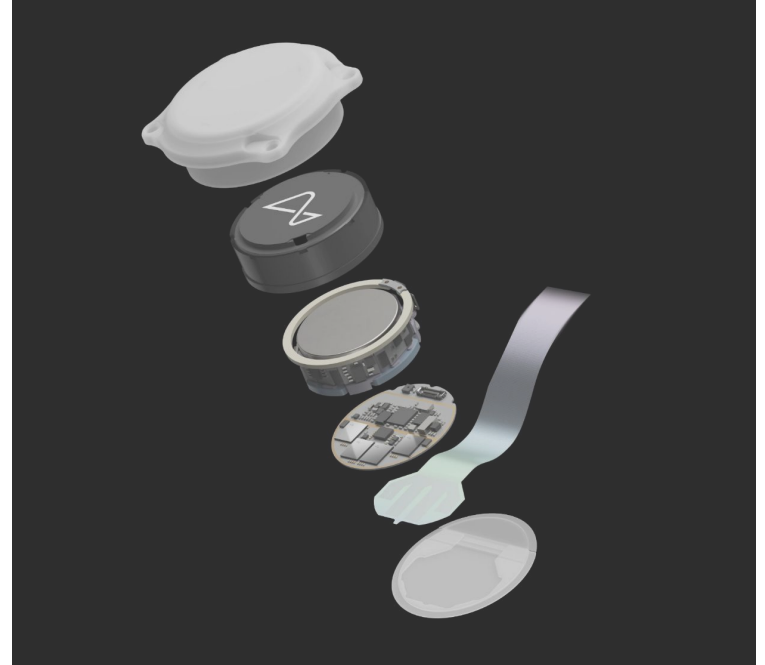
*Assistive Technologies may not be fully assistive with novel utilities. For example, to date - accessing and navigating **chatbots** via a keyboard is still almost impossible.*

Assistive Technologies (AT)

Furthermore, worth mentioning that assistive technologies are poised to improve significantly, thanks to groundbreaking innovations like:

- Artificial intelligence (AI)
- Brain-Computer Interface (BCI)

E.g. Intel ACAT, Neuralink (Tesla)



Neuralink brain-computer interface

The first Neuralink patient who successfully played chess using his brain



Sources: [wired.com](https://www.wired.com), [emag.directindustry.com](https://www.emag.directindustry.com), [neuralink.com](https://www.neuralink.com)

Policies & Compliances

Inclusive and accessibility policies are enacted across the globe to ensure compliance subject to the country's jurisdiction. Existing compliances are derived from the **Web Content Accessibility Guidelines (WCAG)**. Below are several examples:



Rehabilitation Act, 1973
Americans with Disabilities Act (ADA)
Section508.gov



The Accessible Canada Act, or Bill C-81
(Canadian provinces have their own amendments)



Equality Act 2010



Act on Equal Opportunities for Disabled Persons of 2002
Federal Ordinance on Barrier-Free Information Technology



Equal Status Acts 2000 to 2004
S.I. No. 358/2020 European Union



Guidelines for Indian Government Websites
Rights of Persons with Disabilities Act, 2016 (RPD)

The European Accessibility Act (EAA)

In Europe, the EAA Act will come into effect on Jun 28, 2025 to ensure that products and services are usable by everyone.

Companies operating in European member states **must achieve compliance (WCAG Level AA) by June 28, 2025.**

Companies with 10 or less people are exempt from this requirement.

More at: ec.europa.eu/social/main.jsp?catId=1202





Therefore...

*It is clear that accessibility **must be prioritized** to comply with enacted legislations & ensure continued business operations & success.*

Establishing Accessibility practices

Persuading stakeholders in embedding inclusive and accessibility practices **can be challenging**.

Stakeholders often treat accessibility as an **'afterthought'**, leading to **lower prioritization** in making solutions compliant. Reflecting on my past experience, stakeholders typically cite the following reasons:

- **Expense:** Retrofitting already deployed solutions can be costly.
- **User base:** Stakeholders often argue that people with special needs only comprise 2-5% of their users or customers.
- **Reluctance:** If the solution is functioning well and generating revenue, stakeholders question the need for changes.



How to establish Accessibility practices

Establishing accessibility within an organization is typically done via (one of) the following steps:

Having a dedicated Accessibility team to:

- Take responsibility for **implementing, and maintaining accessibility standards** across the organization.
- **Run user research among people with disabilities** to gather diverse perspectives and insights.

Having a cross-functional integration by:

- Embedding **accessibility experts within key departments**, such as product design, development, and marketing.
- Ensuring that **accessibility considerations are prioritized** in every product development phase and service delivery.

Success cases

Companies with an inclusive mindset tend to benefit from the competitive landscape.

A Nov. 2023 report by **Accenture** revealed that companies that drove accessibility practices and disability inclusion reported increased:

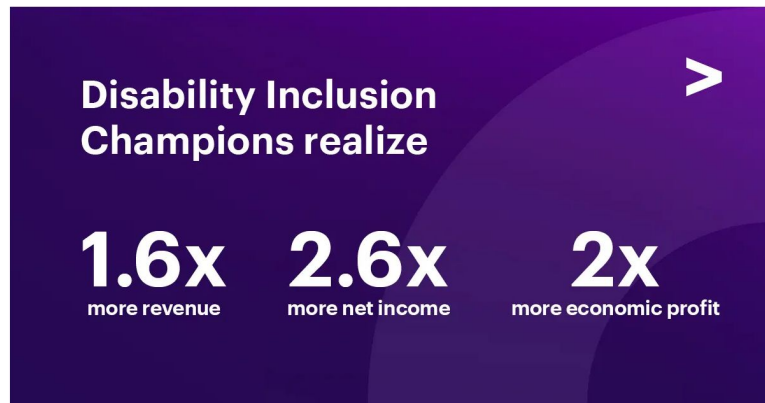
- revenue
- net income
- profit

NOVEMBER 27, 2023

Companies that Lead in Disability Inclusion Outperform Peers Financially, Reveals New Research from Accenture

NEW YORK; Nov. 27, 2023 – Companies that lead in disability inclusion drive more revenue, net income and profit, according to a new research report from Accenture (NYSE: ACN) in partnership with Disability:IN and the American Association of People with Disabilities (AAPD).

Building on the 2018 [landmark report](#) on disability inclusion at work in the United States, the follow-up research, titled “[The Disability Inclusion Imperative](#),” explores disability inclusion amid major technological advances, changes in geopolitical dynamics and the effects of a global pandemic across 346 companies in the US. These companies participated in the [Disability Equality Index \(DEI\)](#), a leading global benchmarking tool that scores businesses on their disability inclusion policies and practices.



Source: newsroom.accenture.com

Accessibility mindset in action - a few notable companies

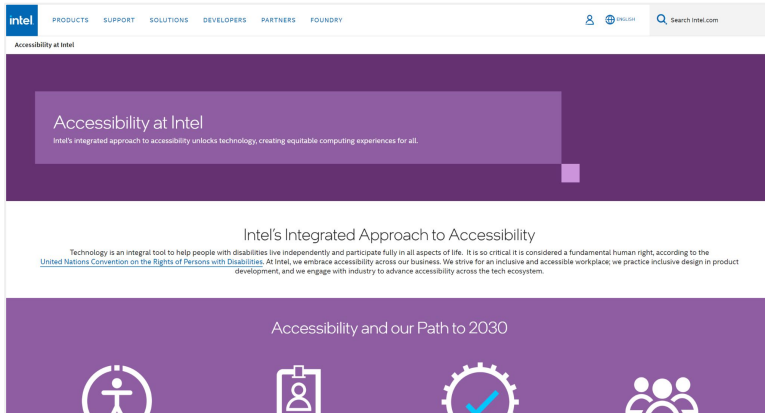


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Digital Banking Bank accounts Borrowing Credit Cards Savings Investments Insurance Sustainability Help and support

Disability, wellbeing and challenging times Supporting your needs, whatever your situation

If you have a disability, a physical or mental health condition, or just need extra support because your circumstances have changed, we have a range of ways to help make banking easier.



intel PRODUCTS SUPPORT SOLUTIONS DEVELOPERS PARTNERS FOUNDRY

Accessibility at Intel

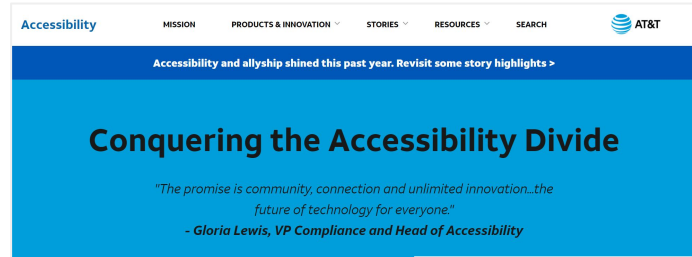
Accessibility at Intel

Intel's integrated approach to accessibility unlocks technology, creating equitable computing experiences for all.

Intel's Integrated Approach to Accessibility

Technology is an integral tool to help people with disabilities live independently and participate fully in all aspects of life. It is so critical it is considered a fundamental human right, according to the [United Nations Convention on the Rights of Persons with Disabilities](#). At Intel, we embrace accessibility across our business. We strive for an inclusive and accessible workplace; we practice inclusive design in product development, and we engage with industry to advance accessibility across the tech ecosystem.

Accessibility and our Path to 2030



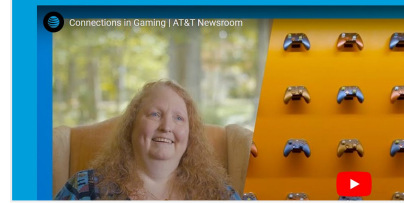
Accessibility MISSION PRODUCTS & INNOVATION STORIES RESOURCES SEARCH **AT&T**

Accessibility and allyship shined this past year. Revisit some story highlights >

Conquering the Accessibility Divide

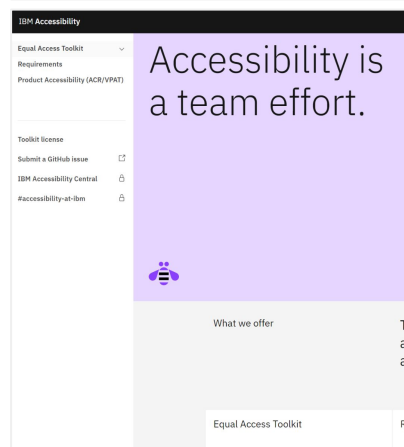
"The promise is community, connection and unlimited innovation...the future of technology for everyone."

- Gloria Lewis, VP Compliance and Head of Accessibility



Connections in Gaming | AT&T Newsroom

Accessibility Conformance Reports

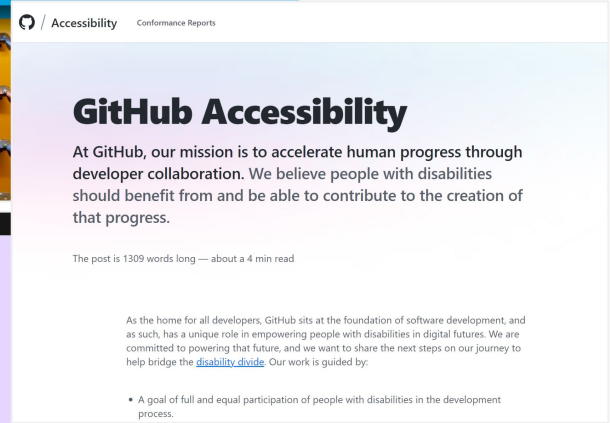


IBM Accessibility

Accessibility is a team effort.

Equal Access Toolkit
Requirements
Product Accessibility (ACR/VPAT)

Toolkit license
Submit a GitHub issue
IBM Accessibility Central
#Accessibility-at-IBM



GitHub Accessibility

At GitHub, our mission is to accelerate human progress through developer collaboration. We believe people with disabilities should benefit from and be able to contribute to the creation of that progress.

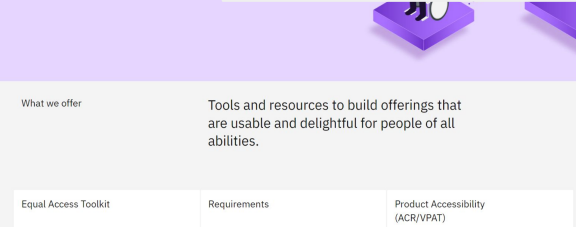
The post is 1309 words long — about a 4 min read

As the home for all developers, GitHub sits at the foundation of software development, and as such, has a unique role in empowering people with disabilities in digital futures. We are committed to powering that future, and we want to share the next steps on our journey to help bridge the [disability divide](#). Our work is guided by:

- A goal of full and equal participation of people with disabilities in the development process.

Examples:

- Barclays bank
- AT&T
- Github
- Intel
- IBM



What we offer

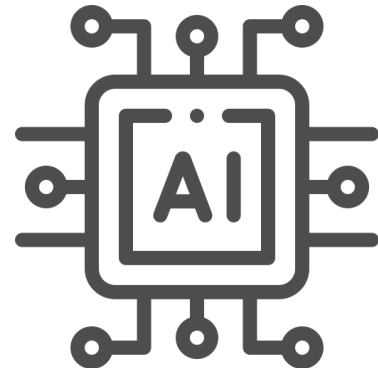
Tools and resources to build offerings that are usable and delightful for people of all abilities.

Equal Access Toolkit	Requirements	Product Accessibility (ACR/VPAT)
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How can AI level Accessibility?

AI has taken the world by storm, and its adoption is on the rise. The intersection of AI and accessibility is inevitable, as AI can enhance accessibility in numerous ways.

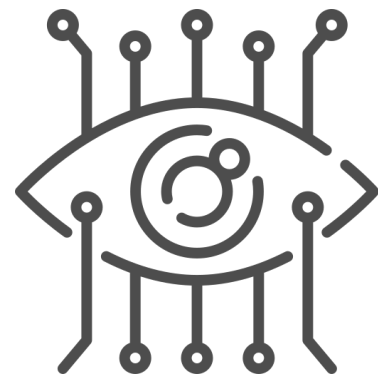
- AI can address mismatches between systems and humans by **leveraging modalities** making people of all abilities be more efficient when using systems.
- AI can **learn and predict** individuals' behaviors and respond to their needs accordingly (e.g. by making recommendations).



How can AI level Accessibility? (cont.)

Several ways how AI can bridge the accessibility gap:

- **Navigation Assistance:** AI-driven navigation apps (e.g., Aira, Be My Eyes) can guide individuals with **visual** or **cognitive** impairments.
- **Speech Recognition and Voice Assistants:** Speech recognition technology (e.g., Siri, Alexa) enables hands-free control, allowing individuals with mobility impairments to use **voice commands**.
- **Image & Object Recognition:** Applications like Seeing AI and Google Lens can interpret visual information, helping individuals with visual impairments understand their surroundings.

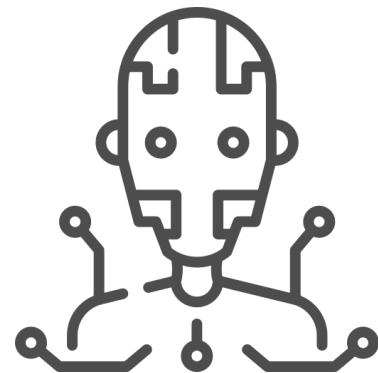


How can AI level Accessibility? (cont.)

Several ways how AI can bridge the accessibility gap:

- **Smart Home Automation:** Smart home AI devices can be voice-controlled, allowing people with **mobility issues** to control aspects of their homes independently.
- **Assistive Robots:** AI-powered robots can help by performing tasks, fetching items, providing companionship, and assisting with daily activities.

However, innovators rarely speak about the possible effects robots may have on (vulnerable) people which may result in the 'uncanny valley effect'.

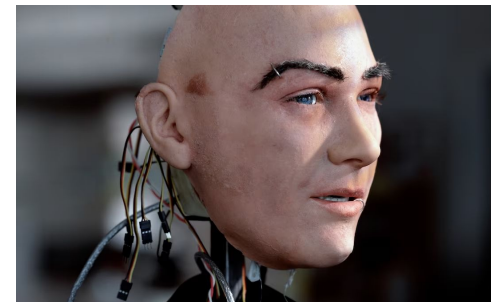


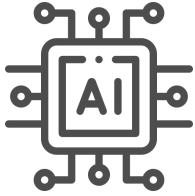
Uncanny Valley Effect

The uncanny valley effect (*Mori, M. 1970*) describes an unsettling feeling some people experience in response to quasi-human figures like humanoid robots, often resulting in:

- Discomfort
- Uneasiness
- Fear

One must be mindful when assigning robots to people with vulnerabilities (i.e. psychological, physiological - e.g. developing a phobia in the long run)...hence more research / investigations are needed.





Conclusion

“AI is bridging the accessibility gap, but it still has ways to go. AI can make mistakes (incl. hallucinations) or have biases. For instance, AI might not understand different accents or languages, which can be challenging for some people.” (AT&T)

Questions?

For queries about accessibility, audits & ways to achieve compliance for your product & organization, please reach me out via:

Linkedin: [linkedin.com/in/jomrca](https://www.linkedin.com/in/jomrca)

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