WHITEPAPER

Fix the System, Not the Person: How AI Active Listening Can Drive Disability Inclusion

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Why This Paper Now

Artificial intelligence increasingly mediates how we move, speak, work, and learn. Yet the people who stand to benefit most—those whose mobility, speech, or perception fall outside a narrow "average"—often find themselves erased by design choices that presume a single, neurotypical body.

The numbers alone reveal the stakes: 1.3 billion people worldwide (16 % of humanity) experience significant disability (World Health Organization), including 42.5 million U.S. residents (13 %) (Pew Research Center) and 61 million (28.7%) according to the Centers for Disease Control and Prevention (CDC).
When AI treats disability as a defect to be cured, it not only misses an immense market; it risks real harm.

This paper reframes the conversation. Instead of asking "How can AI fix disability?" we ask, "How can AI learn from, be shaped by, and ultimately amplify disabled expertise?"

Technoableism

Understanding Its Prevalence

Virginia Tech scholar Dr. Ashley Shew calls the belief that technological progress must "repair" disabled bodies Technoableism. In her words:

"Many of our problems are social, structural, and practical … stemming from the idea that disabled people are fundamentally flawed, unworthy of inclusion, broken, or inadequate." [1]

61M

experience significant disability in the U.S.

13B

experience significant disability worldwide

1] Ashley Shew, Against Technoableism: Rethinking Who Needs Improvement (New York: W. W. Norton, 2023), 5

Technoableism Shows up as:

Cure Stories – exoskeleton ads promising wheelchairs will vanish.

Super-crip Tropes (narratives that idealize disabled people who “overcome” their disability in exceptional ways) -- the “Olympic cyborg” whose very existence sets unrealistic expectations for others

Data Erasure – training sets that filter out non-standard speech or gestures, rendering people invisible to the model.

AI

Where AI Fails—and Why

Current foundation models (Gemini, Claude, ChatGPT) inherit the biases of the corpora they ingest. Autocomplete often “corrects” dysarthric text; content filters mistakenly flag reclaimed disability language; wearables optimize jump height while ignoring balance disorders. The result is a loop in which disabled users must adapt to machines rather than the reverse.

Key AI failure modes

Algorithmic Exclusion - Speech can be mis-transcribed as atypical voices, shutting users out of voice-first interfaces.

Over-medicalization - Computer-vision algorithms can identify disability traits as “pathologies,” reinforcing stigma.

Silencing- Moderation systems suppress a-typical posts that may contain both, disability slurs along with activist reclaim-language—erasing community dialogue.

Include Active Listening in Disability-Led Design

We can break the techno-ableist loop by embedding disability leadership, not merely "consultation," in every technical choice.

Nothing About Us Without Us – hire disabled designers, engineers, and reviewers at parity.

Multimodal Flexibility - let users choose text, gesture, vibro-tactile, eye-tracking, or silence, and let the system pause rather than fail when it meets an unfamiliar signal.

Bias Audits that Count - evaluate word-error rate on dysarthric speech, false-negatives in screen-reader flows, and disclosure of model uncertainty.

Active Listening by Design - build systems that don't just collect input but engage in continuous, responsive feedback loops. Active listening means systems learn from variation, recognize hesitations or corrections as valid signals, and adapt over time—not to normalize but to respect difference.

Stories that Listen Differently

Narratives already exist that flip technoableism on its head

A power-wheelchair firmware update learns an individual's subtle push patterns instead of forcing factory presets.

Adaptive earbuds offer a vestibular-support mode that stabilizes gait for users with balance disorders, rather than only tracking "personal best" VO_2 max.

Neural earbuds that allow for micro gestures to control hands free screen free a full range of digital devices unique to user and circumstance

A community-curated corpus of disability memoirs fine-tunes an LLM, reducing harmful completions and improving empathy in healthcare chatbots.

AI Enabled Presence

If the last decade of AI celebrated prediction, the next must celebrate presence. The most powerful systems will not be flawless oracular engines; they will be attentive companions capable of pausing, asking, and adapting to bodies and minds that shift over a lifetime.

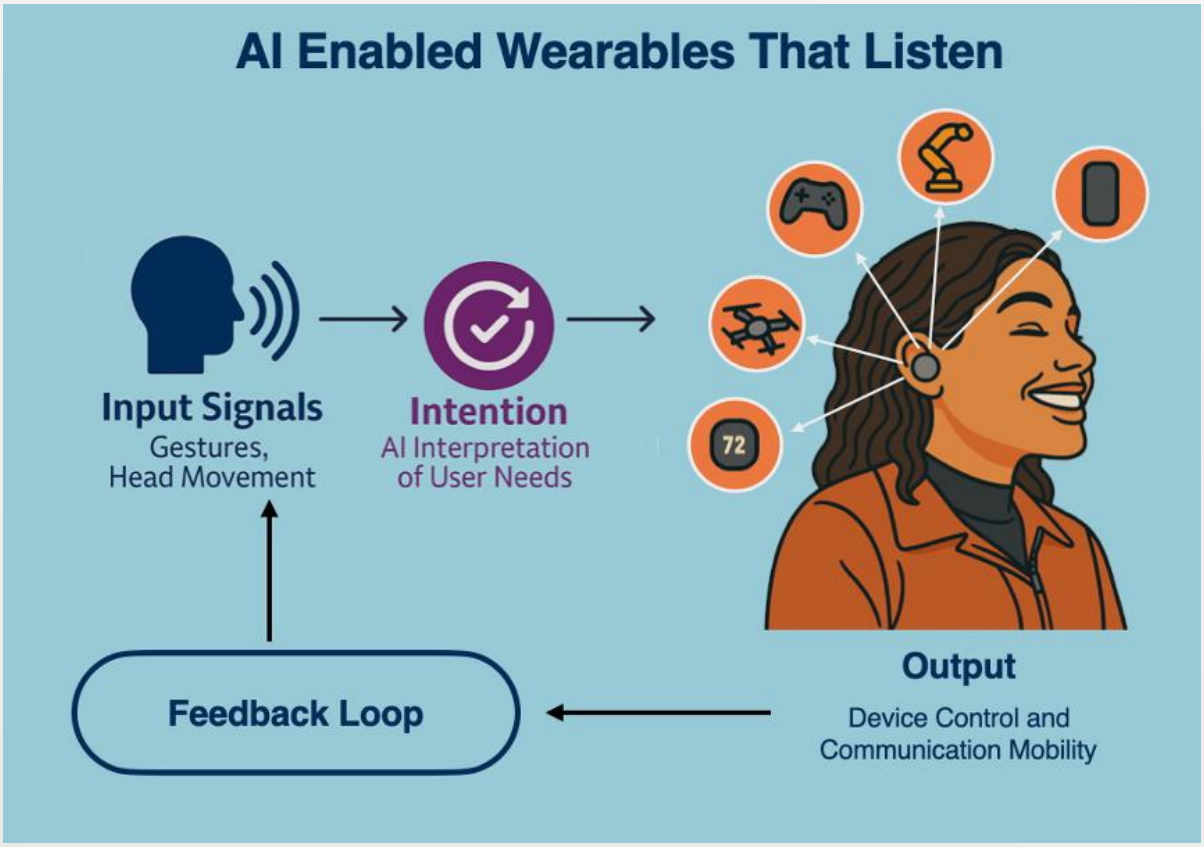

Photo credit: Rebeca Aguirre, 2025

Policy & Ecosystem Levers

Governments, funders, and corporations can accelerate this shift

Regulators - extend the ADA, EU AI Act, and similar statutes to algorithmic outputs; require disability-impact assessments.

Funders - make participatory design a grant-eligibility criterion.

Industry - tie executive bonuses to accessibility KPIs; open-source diverse training sets under permissive licenses.

Call to Action:
Build Tech That Listens

- [ ] Test Your Product with Disabled Users from Day One. If disabled people can't use it, it's not ready. Build access in early not later.
- [ ] Early Integration: Involve diverse groups of disabled users in the initial stages of product design and prototyping.
- [ ] Continuous Feedback Loops: Establish regular feedback sessions specifically for accessibility features, actively seeking input from users with various disabilities.
- [ ] Iterative Design: Adopt a design process that emphasizes iteration based on real-world usage and feedback from disabled users.

Audit Your Data for Disability Bias

Your model learns what you feed it. Excluding disabled signals trains exclusion into the system that is difficult to correct later.

- [ ] Inclusive Dataset Collection: Ensure datasets include diverse representations of abilities, communication styles, and interactions.
- [ ] Bias Detection Tools: Employ automated and manual auditing methods to identify gaps and biases related to disability.
- [ ] Regular Reviews and Updates: Implement regular intervals for reviewing datasets to ensure continuous improvement and correction of biases.

Design for Pause, Not Failure

Let systems wait, ask, or adapt when a user responds differently. Presence matters more than speed.

- [ ] Flexible Interaction Modes: Allow users to control timing, pacing, and mode of interaction, ensuring systems can adapt rather than time-out.
- [ ] Adaptive Response Mechanisms: Design systems to interpret pauses or alternative forms of user responses as valid inputs rather than errors.
- [ ] Presence-Oriented Metrics: Evaluate system performance based on successful engagement and task completion rather than speed or rapid interactions.

Conclusion

AI can magnify human capacity only when it recognizes that variation, not uniformity, is the norm.

By rooting design in disabled expertise, auditing bias specific to disability, and telling richer stories than the tired “fix or inspire” binary, we unlock technologies that benefit everyone—because everybody, at some point, becomes a “different” body.

The invitation is simple: build with us, not for us, and the future of AI will listen—and respond—more justly.

Author Biographies

Rebeca Aguirre is the author of Amplifying Voices and a thought leader in signal-based AI design for self-expression. A graduate of the USC Annenberg School for Communication and Journalism, she brings lived and professional experience in assistive technology. Her work focuses on adaptive systems that support meaningful communication in caregiving relationships.

Dr. Rodney Sappington is a researcher in the field of artificial intelligence (AI) and machine learning. A graduate from Johns Hopkins University, he has over 20 years of experience in developing neural technologies, medical diagnostics, computer vision, and AI safety applications. His current research focuses on agent-based systems in areas of bias, decision making, machine consciousness, and moral dilemma.