Tepper Capstone: Accessibility and AI

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Tepper Team

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Agenda

1. Introductions
2. Project Goals
3. Assessing Accessibility Partnerships
4. High-level Categories Deep-Dive
5. Next Steps

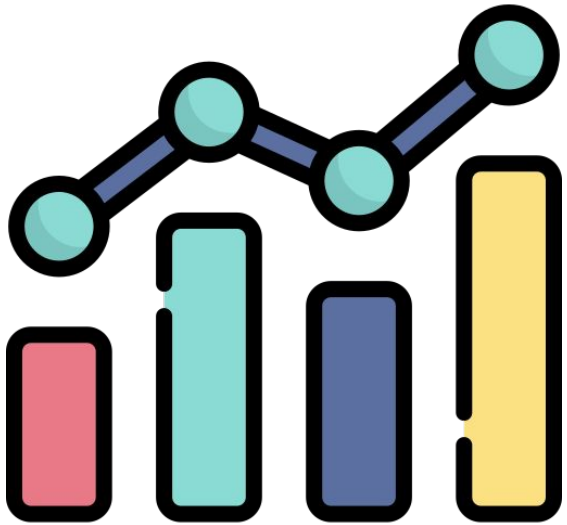
Overall Project Goals

1. Gain a comprehensive understanding of the Accessibility Tech Landscape
2. Align current landscape to Workday’s strategic objectives
3. Create a CB Insights Market Map in Figma
4. Conduct an AI Accessibility Trade Study
5. Identify Strategic Opportunities for Workday

Integrated Market Map

Assessing Accessibility Partnerships

- **Feature Success Rate**
- Daily/Monthly Active Users
- Integration Compatibility/Time
- Feature Latency
- Prototyping Potential



Visual Accessibility Landscape

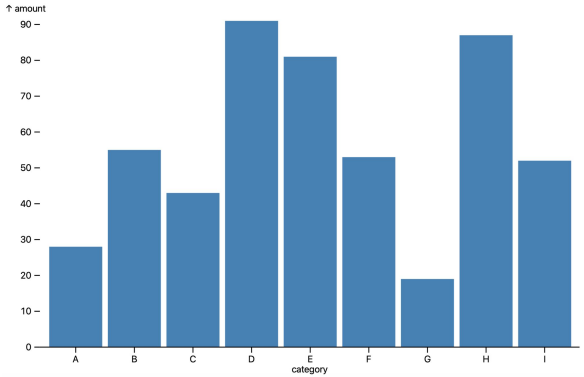
Visual Focus: Chart Interpretation

Problem Statement: When I **interact with visual charts**, I want access to **accurate, detailed descriptions** and alternative ways to **understand the data**, so that I can make informed decisions **without needing to rely on visual modalities**.

High Level Functional Flow of Chart Interpretation

What will Software need to do at a high level?

VizAbility Allows BLV Users to Interact with Visual Data



Olli tree view:

A bar chart. With axes category and amount.

X-axis titled category. For a nominal scale. With 9 values from A to I. The average value for the amount field is 57, the maximum is 91, and the minimum is 19.

1 of 9. Category equals A. 1 value. The amount value is 28. Press t to open table.

2 of 9. Category equals B. 1 value. The amount value is 55. Press t to open table.

3 of 9. Category equals C. 1 value. The amount value is 43. Press t to open table.

4 of 9. Category equals D. 1 value. The amount value is 91. Press t to open table.

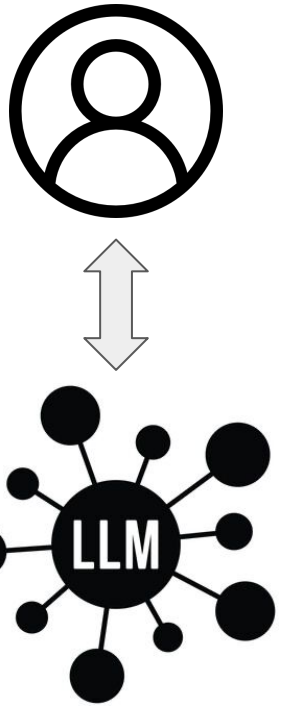
5 of 9. Category equals E. 1 value. The amount value is 81. Press t to open table.

6 of 9. Category equals F. 1 value. The amount value is 53. Press t to open table.

7 of 9. Category equals G. 1 value. The amount value is 19. Press t to open table.

8 of 9. Category equals H. 1 value. The amount value is 87. Press t to open table.

9 of 9. Category equals I. 1 value. The amount value is 52. Press t to open table.



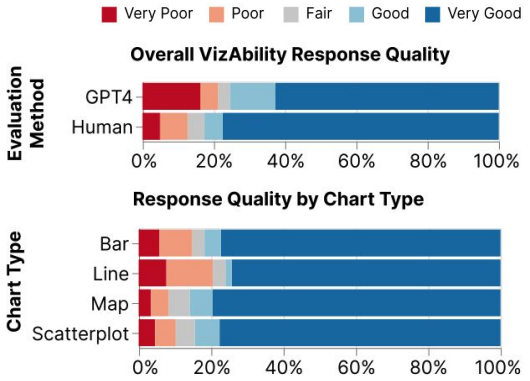
Fully Integrated Solution with High Accuracy

Pros:

- High Feature Success Rate
- Fully Integrated Solution
- Accuracy relatively even across chart type
- Follows standard accessibility principles

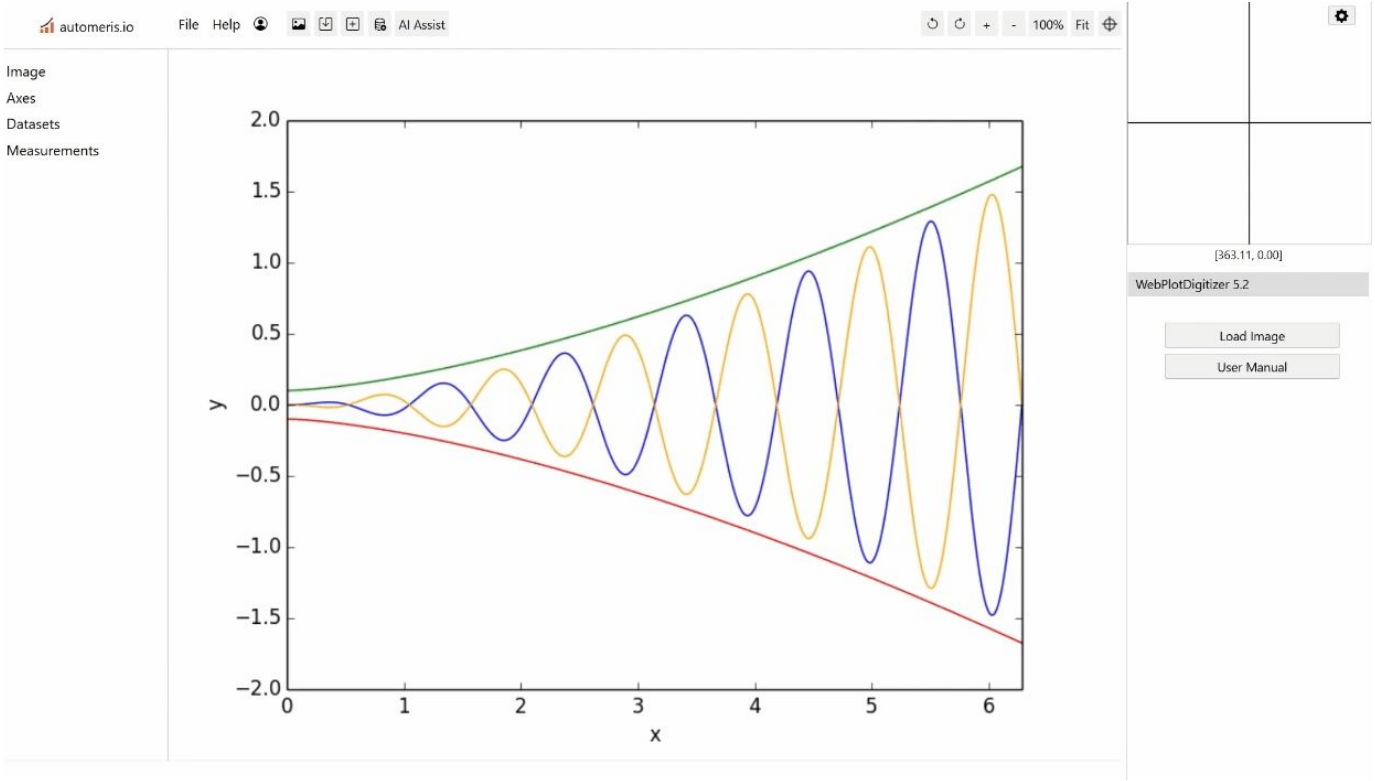
Cons:

- LLM in use not stated in White Paper
- Limited to JavaScript Libraries
- Difficulties classifying contextual queries



Query Type	Precision	Recall	F1	Count
Analytical	90.96%	93.10%	92.02%	551
Contextual	64.65%	67.37%	65.98%	95
Navigation	100%	97.50%	98.73%	40
Visual	89.09%	74.81%	81.33%	131

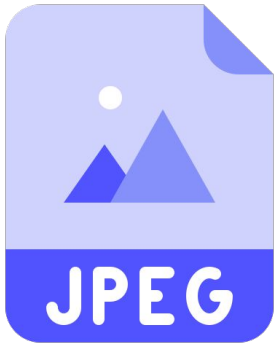
Pair WebPlotDigitizer with an LLM



Maximum Flexibility but Significant Integration Effort

Pros:

- Works with all chart types/formats
- Completely Open-Source Library
- AI integrations with LLMs in Development



Cons:

- Limited data on performance
- Many chart types require manual setup
- Current version requires integration with an LLM

Visual Top Company Assessment

Products	*Feature Success Rate*	*Integration Compatibility*	*Prototyping Potential*	*Feature Latency*
WebPlotDigitizer				
Boston College VizAbility				
Meta Ray-Ban Smart Glasses				
OpenAI ChatGPT-4o				

Physical Accessibility Landscape

Physical

Accessibility Code Generation & Optimization

Google

ekso BIONICS

tobii dynavox

SAMSUNG

AI-Based Personalized Accessibility Agents

hp

ReWalk Robotics

IBM

AI-Powered Automated Agents for Accessibility

SONY

intel

LIFTWARE

Microsoft

AI-Driven Task Automation for Motor Disabilities

amazon

DELL

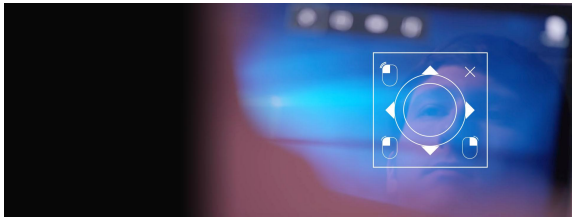
ottobock.

Physical Low-Level Category Focus

- **Jobs to Be Done**
  - Enable users to control devices and navigate digital environments easily.
- **Essence of the Problem**
  - People with limited mobility struggle to interact with tech and complete tasks independently.
- **What Does the Software Do?**
  - Provides alternative input methods (eye-tracking, voice commands) and automates tasks for more independence.

Potential Partnership

- **Microsoft (Eye Control):**
  - *Focus*: Hands-free device control through eye-tracking.
  - *Strength*: Advanced AI and large-scale adoption.



- **Liftware (Task Automation Software):**
  - *Focus*: Automating tasks for users with motor impairments.
  - *Strength*: Personalized task assistance for daily routines.

Why These Partnerships?

Complements strengths in AI and task automation, addressing full user needs.

Physical Top Company Assessment

Products	*Feature Success Rate*	*Integration Compatibility*	*Prototyping Potential*	*Feature Latency*
Microsoft's Eye Control				
Liftware				
Apple's AssistiveTouch				
ReWalk Robotics				

Neurodivergence Accessibility Landscape

Axios HQ: A Strategic Ally for Neurodivergence Innovation

AXIOS HQ

- Problem Statement: Neurodiverse individuals with dyslexia often struggle to process dense and complex information, limiting their ability to engage effectively in professional and educational settings.
- Feature: Smart Brevity for Dyslexia Support
- Solution: AI simplifies complex information into an easily digestible format, helping individuals with dyslexia process content quickly without losing meaning.
- Con: Private, internal information and memos may show up across the platform

Mentra as a Strategic Ally for Neurodivergent Empowerment

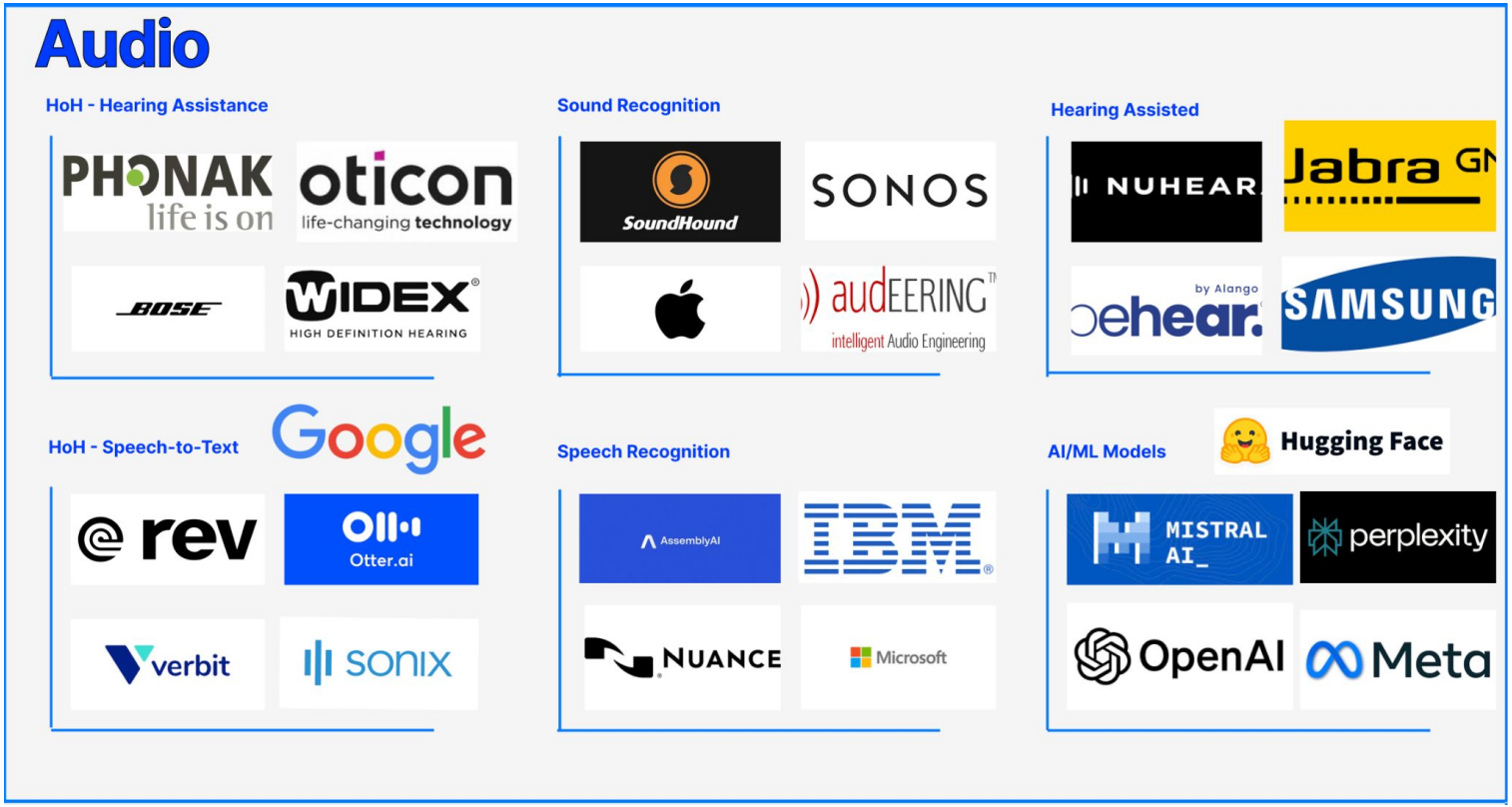
Mentra

- Problem Statement: Neurodivergent individuals often struggle to find employment that aligns with their unique strengths due to traditional hiring practices that overlook their capabilities.
- Feature: AI-Powered Neurodiverse Job Matching
- Solution: An employment platform that matches neurodivergent individuals (including those with autism, ADHD, and dyslexia) to careers in tech, ensuring jobs align with their cognitive strengths.
- Con: Many neurodivergent individuals are not comfortable disclosing this information to their employers.

Neurodivergence Top Company Assessment

Products	*Feature Success Rate*	*Integration Compatibility*	*Prototyping Potential*	*Feature Latency*
Dysolve				
Mentra				
Axios HQ				
Erudit				

Audio Accessibility Landscape (Continued):



Audio Low-Level Category Focus - AI/ML Models:

- **Jobs to Be Done**
  - Provide users who are hard-of-hearing real-time transcription of spoken word in a variety of languages.
- **Essence of the Problem**
  - HoH users cannot reliably understand verbal feedback. While manual and semi-automated transcription services exist, they're limited in terms of accuracy, reliability, and supported languages.
- **What Does the Software Do?**
  - Provides real-time transcription of audio content in a variety of languages through AI/ML models.

Potential Partnerships

- **HuggingFace Agentic Framework:**
  - *Focus*: Agentic workflows of open-source AI/ML models to scale in-house use cases.
  - *Strength*: Low-cost, high-performing open-source AI/ML models with infrastructural capabilities (90+% savings relative to enterprise model benchmark tasks such as transcription).
- **AssemblyAI's Audio Intelligence APIs:**
  - *Focus*: Detect pre-configured content relevant to transcription content.
  - *Strength*: Proprietary models specialized in detecting key attributes for enriched transcription.

Why These Partnerships?

These companies are industry-leading in terms of the core technology, performance, integration capabilities and latency.

We Recommend VizAbility, Mentra, and Liftware

workday.

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Thank You!