

Voices of the Future: How AI is Transforming Speech-Language Pathology

Mehreen Kakwan, M.A., CCC-SLP
March 14, 2025

1

Relevant Financial & Non-Financial Disclosures

Financial: My employer, Global Psychological, covered the cost of attending this MSHA Conference.

Non-financial: I do not have any relevant non-financial relationships to disclose

2

Learning Outcomes

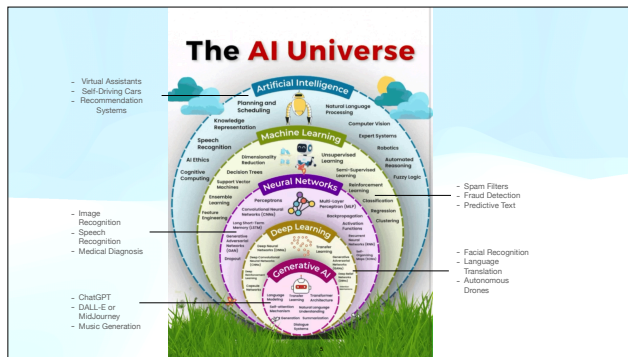
Participants will learn:

How Artificial Intelligence (AI) is currently being applied in the field and the benefits.
About the risks associated with using AI and how to mitigate them.
About potential future applications of AI in the field of SLP.

3

What is considered Artificial Intelligence?

4



Why do we care so much about AI these days?

5

SLP Responsibilities



7

Current Limits in SLP

Paper: Opportunities and Challenges for AI-Based Support for SLP

- Demand exceeds the capacity of SLP workforce
- Limited/No access in rural areas for underserved communities (increased since Covid-19 pandemic)
- High caseloads plus significant need for admin tasks (e.g., therapy prep, EBP research, paperwork for insurance or FAPE, meetings, screenings)
- Higher rates of burnout
- Intention: "If parts of the job of SLPs could be made easier, they may be able to have more manageable caseloads, expand their access, and spend more of their time doing the work they and most meaningful, such as working directly with their clients."

8

Demand for SLP Services Exceeding Availability of Providers

9

Completing Analysis & Written Admin Tasks

13



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14

AI Managed Treatment Programs & Client Progress Data

Example: Amplio Learning

15

Open Access

Opinion

Artificial Intelligence in the Interpretation of Videofluoroscopic Swallow Studies: Implications and Advances for Speech–Language Pathologists

by Anna M. Girardi ^{1,2,*} , Elizabeth A. Cardell ^{1,2,3}  and Stephen P. Bird ^{1,2} 

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16

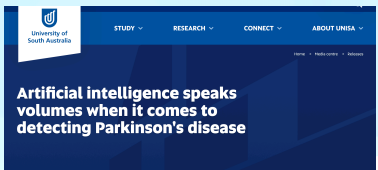
Demo: Goal Writing with Deep Seek

17

Improving Clinical Outcomes

18

Future of AI



21 November 2024

Algorithms that can detect subtle changes in a person's voice are emerging as a potential new diagnostic tool for Parkinson's disease, according to researchers from Iraq and Australia.

Speech impairments are often the first indicators of the disease, growing neurological disease in the world, affecting more than 10 million people, but traditional diagnostic methods are often complex and slow, delaying early detection.

Researchers from Middle Technical University (MTU) in Baghdad and the University of South Australia (UNSA) have recently published a groundbreaking review in



19

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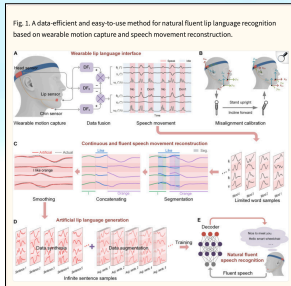
10 July 2024; 10.1126/sciadv.abc1234

A data-efficient and easy-to-use lip language interface based on wearable motion capture and speech movement reconstruction

Shihua Li¹, Yuxin Shao¹, Yuxin Zhu¹, Jintao Wang¹, Shihua Li¹

¹Author information ²Article notes ³Copyright and license information

PNAS 121(26):4567-4574; 2024



20

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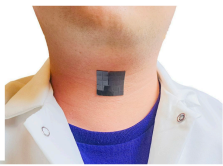
Newsroom

UCLA Magazine Categories For news media

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Speaking without vocal cords, thanks to a new AI-assisted wearable device

The adhesive skin patch is the latest advance by UCLA engineers in speech technology for people with disabilities

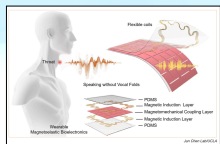


Measuring just over 1 square inch, the device could help those with degenerative vocal cords regain their voice function.

Christine Wei-Lee

March 14, 2024

Share



21

Providing Increased Accessibility for our Clients

22

I'm a Lifelong Stutterer.
AI is Setting Me Free.



23

Project Relate by Google

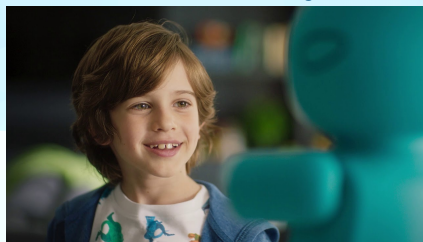
Speech Recognition of Less Intelligible Speech



24

Moxie

The Revolutionary Robot Companion for Social-Emotional Learning



Named one of Time Magazine's Best Toys of 2020

5

Challenges

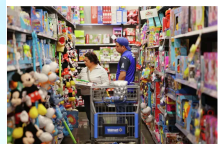
28

Privacy Concerns

NEW

Experts warn about smart toys, AI-driven dolls and other high-tech gifts

By **Vincent Gabrielle**, Staff writer
Nov 24, 2023



DURHAM, CALIFORNIA - NOVEMBER 14: People shop ahead of Black Friday at a Walmart Supercenter on November 14, 2023 in Burbank, California. When shopping for smart toys, experts recommend considering their cameras, microphones and connectivity features. (Photo by Mario Tama/Getty Images)

59

- Internet Connectivity
- Cloud Storage
- Third-party storage services

Camera - Facial Recognition/
Environment Recordings
Voice Data
Personal Data
GPS

AI has Limited Understanding of Disordered Speech

OPEN ACCESS | Research Article | 7 November 2024

Automatic Speech Recognition of Conversational Speech in Individuals With Disordered Speech

Authors: Jimmy Tabin, Phillip Nelson, Bob MacDonald, Rus Heywood, Richard Cave, Katie Seaver, Antoine Desjardins, Pan-Pan Jiang, and Jordan R. Green

Publication: Journal of Speech, Language, and Hearing Research • Volume 67, Number 11 • Pages 4176-4185
https://doi.org/10.1044/2024.JSLHR.24-00045



Road Blocks to Integrating AI in SLP Life



JSLHR

Review Article

Artificial Intelligence and the Future of Communication Sciences and Disorders: A Bibliometric and Visualization Analysis

Minyue Zhang, Enze Tang, Hongwei Ding, and Yang Zhang

*Speech-Language-Hearing Center, School of Foreign Languages, Shanghai Jiao Tong University, China *National Research Centre for Language and Well-being, Shanghai, China *Department of Psychology and Behavioral Sciences, Zhejiang University, Hangzhou, China *Department of Speech-Language-Hearing Sciences, University of Minnesota, Twin Cities, Minneapolis *Masonic Institute for the Developing Brain, University of Minnesota, Twin Cities, Minneapolis

Published 7 November 2024

Road Blocks to Integrating AI

- Teaching new users more accustomed to traditional methods
- Balance AI autonomy and human experience
- “Professionals must retain control over clinical decisions while leveraging AI as a helpful tool” (Singh, et al., 2020)
- Deep learning operates like “black box” (Valizadeh et al, 2024)
- Overestimating model performance and small sample sizes

AI Extrapolates from Existing Data Sets

"While people are frequently steered by unconscious preferences, AI also highlights certain areas of attention, making others less visible. Depending on which dataset AI is trained on, it will inevitably become targeted at one population and by default will discriminate against other populations."

- Olya Kudina, PhD, assistant professor in the ethics of technology at Delft University of Technology in the Netherlands

31

Ethics of Liability Ethics of Recommendations

32

"Black Box" Problem Solving + Plagiarism

33

Versatile Feedback & Necessary Soft Skills

Human Connection/Nonverbal Feedback/Behavior Management

24

Environmental Costs

25

REFRAME: ~~Artificial~~ Assistive or Alternate Intelligence

26

Resources

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37

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38

Thank You!



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39