“It’s not a representation of me”: Examining Accent Bias and Digital Exclusion in Synthetic AI Voice Services

Shira Michel*, Sufi Kaur*, Sarah Elizabeth Gillespie*, Jeffrey Gleason*, Christo Wilson*, Avijit Ghosh+

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ACM Conference on Fairness, Accountability, and Transparency (FAccT) 2025

Background

There is a broader issue of accent bias and digital exclusion faced by those with diverse accents.

Image credits: thetimes.com, peopleofcolorintech.com, motherjones.com

Background

Why Do Cartoon Villains Speak in Foreign Accents?

Children's shows often use non-standard dialects to voice the "bad guys," sending a dangerous message to kids about diversity.

By Isabel Fattal

wavebreakmedia / Skylines / Porfang / Shutterstock / Disney / Zak Bickel / The Atlantic

Poll brands Scouse accent one of the least attractive - tell us why it's them who are talking rubbish

A study by YouGov saw the Scouse accent ranked as one of the least attractive accents in the British Isles

NEWS By Emilia Bona Content Editor

13:42, 17 Aug 2015 | Updated 11:47, 16 Nov 2015

YouGov | yougov.com November 27-28, 2014

Which accents are the most and least attractive?

Media culture shapes identity and societal values that influence how we perceive morality and power.

Image credits: theatlantic.com, www.mirror.co.uk

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Accent ≠ dialect [1].

Image credits: thevarsity.ca

[1] Markl and Lai. 2023. ISCA.

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Accents are a **key part of identity**, *everyone* has one [1].

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Background

Accent ≠ dialect [1].

Accents are a **key part of identity**, *everyone* has one [1].

Familiar accents **improve listener comprehension and cognitive processing** [2,3,4].

Our work focuses on **issues that may stem from low-accuracy systems** for the English language.

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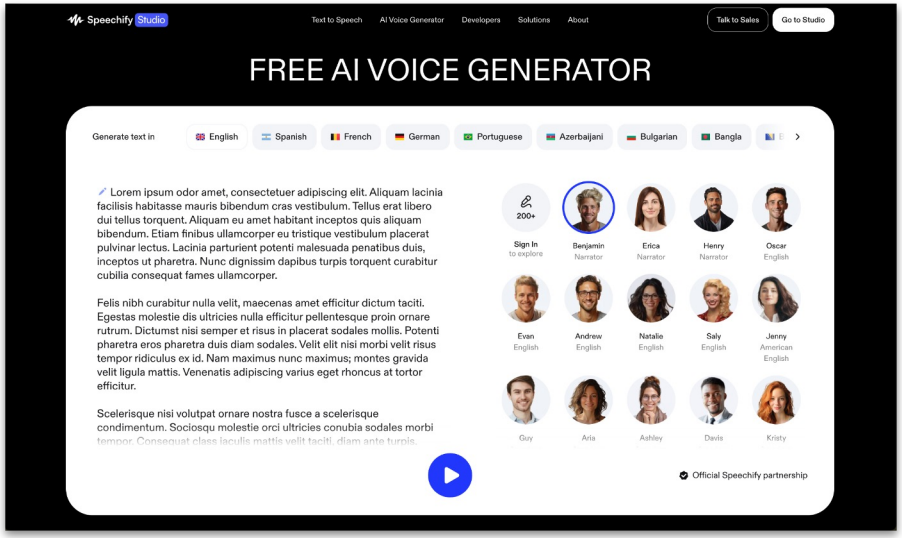
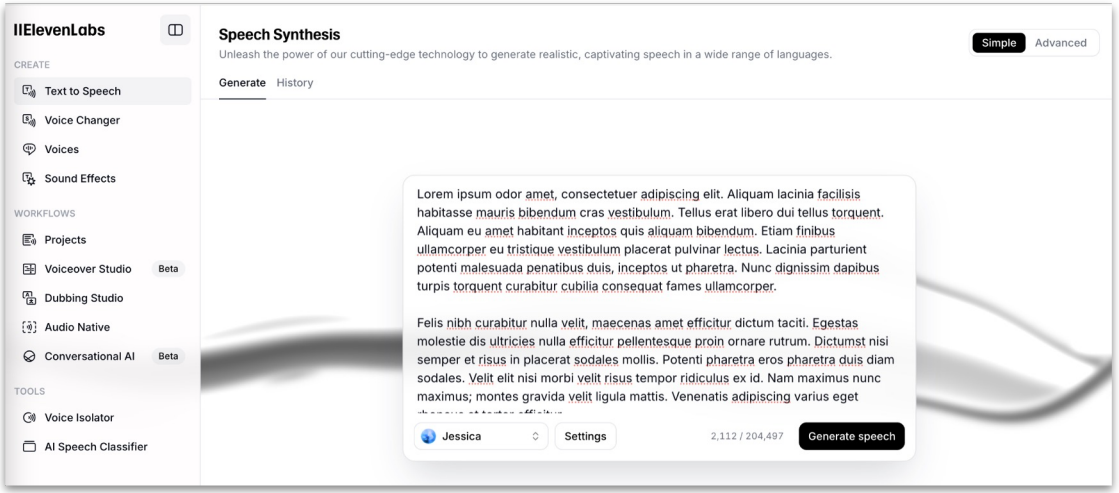
Study Overview

Speechify



IIElevenLabs

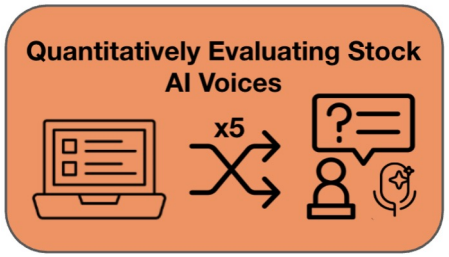


*We investigated **American, Australian, African, British, and Indian English-language accents** as labeled by these services*.*

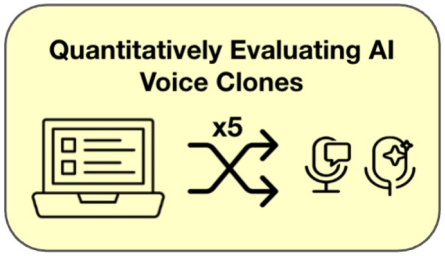
**As of May 2024, ElevenLabs offered only these five accents while Speechify provided these same accents as options.*
Image credits: speechify.com, elevenlabs.io

Study Overview

Study 1



Study 2



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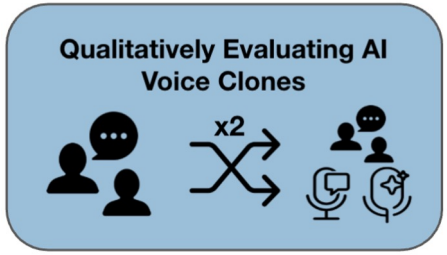

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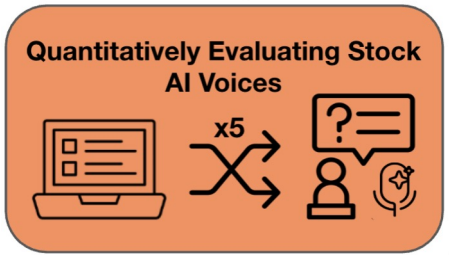

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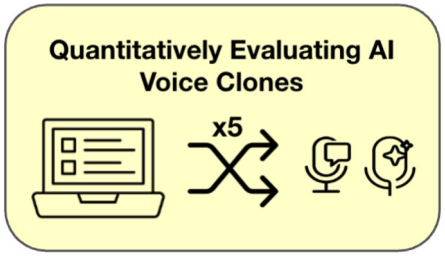

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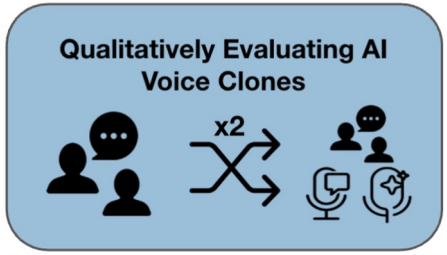

How well do synthetic AI voice services capture and represent diverse accents?

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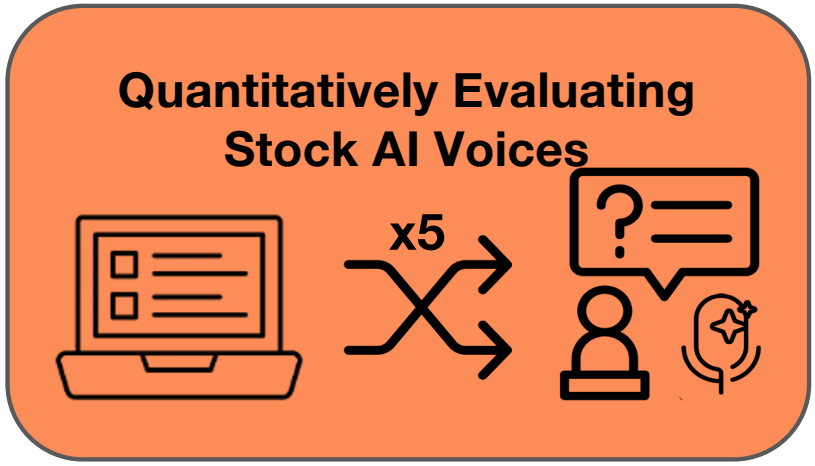

N = 250 (diverse accents and pitches*)

Each participant listens to **5 stock AI voices**

** We define pitches as having high- or low-pitched voices.*
[5] Viswanathan and Viswanathan. 2005. Computer speech & language 19.

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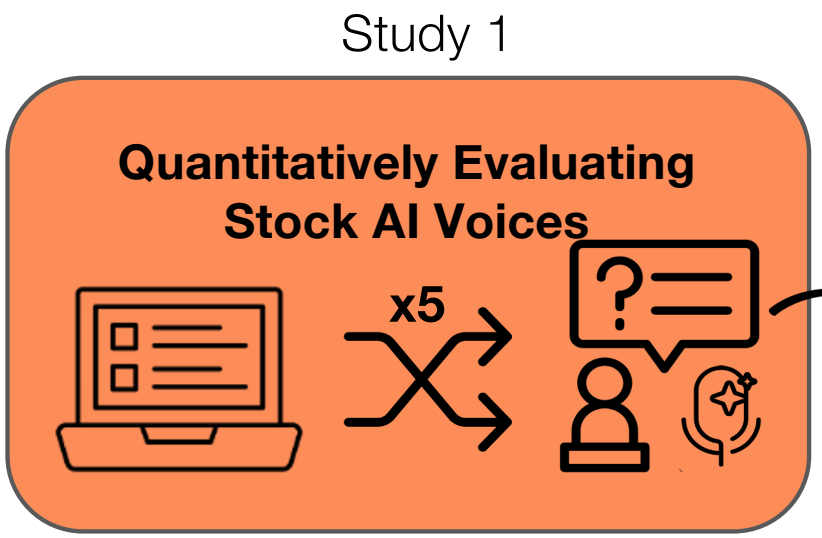

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Labeling task:

Voice Quality (Modified Mean Opinion Score [5])**:** *How would you describe the naturalness of the audio?*

Voice Persona: *What accent do you think the speaker of the voice identifies with?*

** We define pitches as having high- or low-pitched voices.*
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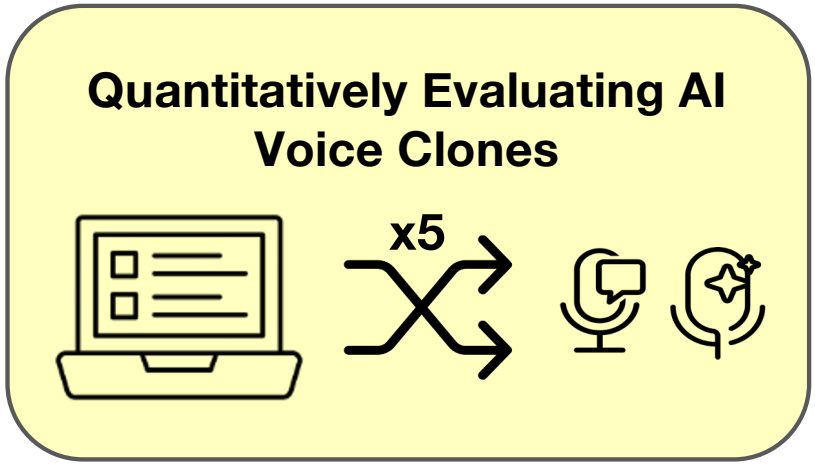

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**Pitches = high- or low-pitched voices*

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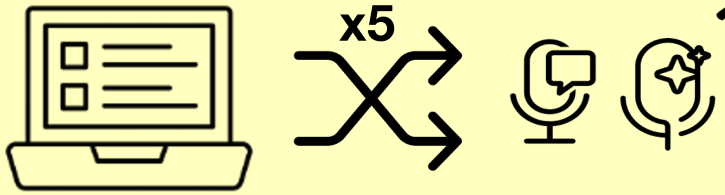
Quantitatively Evaluating AI Voice Clones



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Labeling task:

Naturalness of Voice:** *How natural (i.e., human-sounding) is AUDIO 1?*

Accent Mimicry Accuracy (AMA):** *How well do you think AUDIO 2 emulated the speech style of AUDIO 1?*

**Pitches = high- or low-pitched voices*
*** Please see our paper for details on these metrics*

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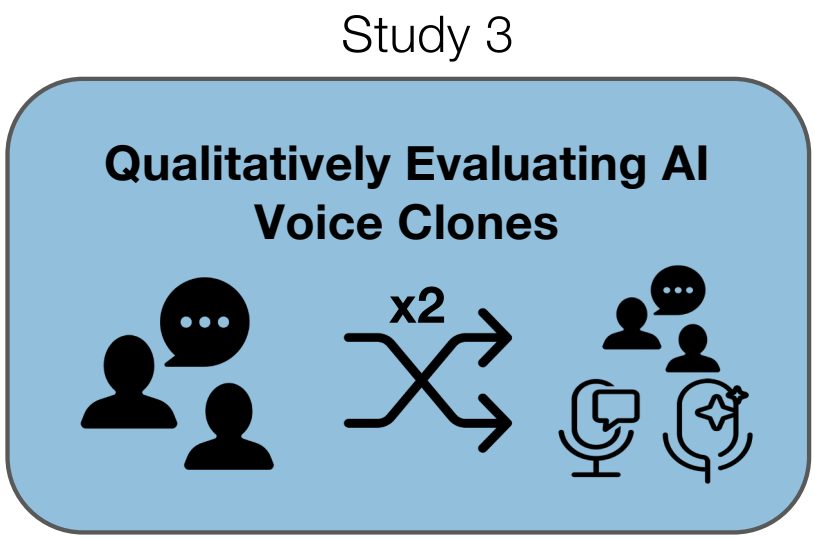

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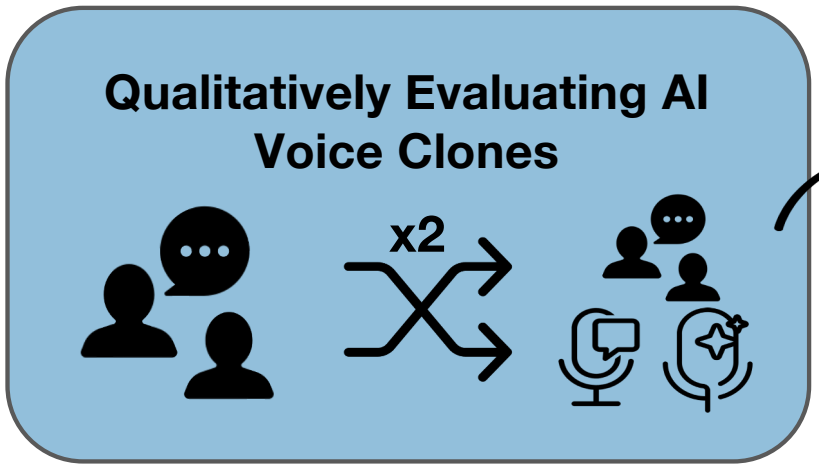

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Interview Guide:

a) Before Listening Questions

Relationship with Voice and Accent

Familiarity with AI-generated Speech

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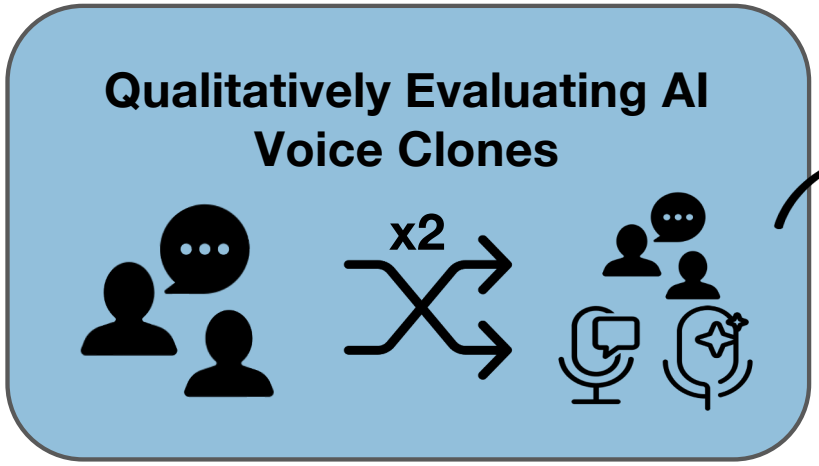

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Each participant listens to **2 pairs of their recorded and clones voices**

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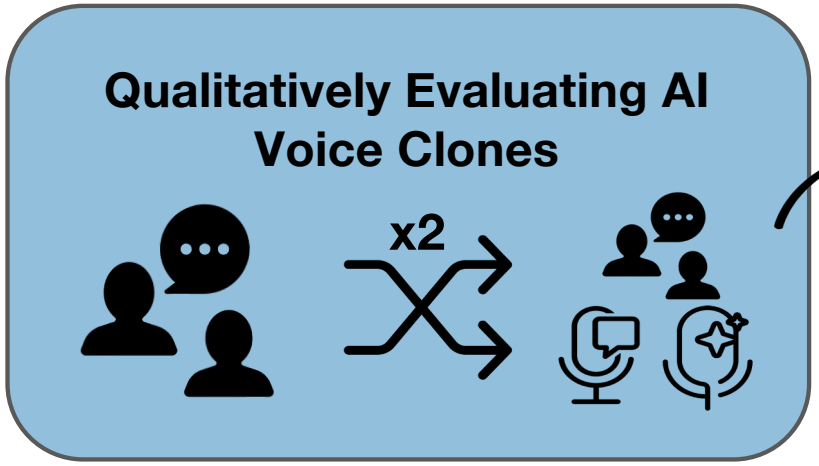

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b) Evaluation
Recreation and Accent Mimicry Quality (AMQ):** *How well do you think the generated voice created your voice?*

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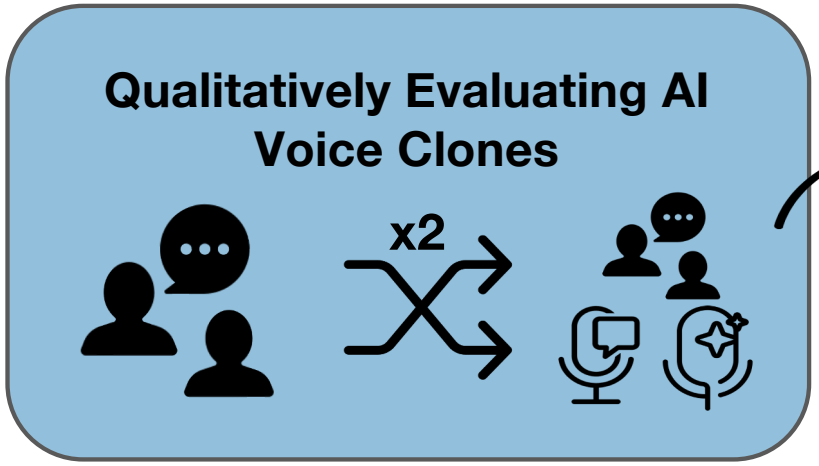

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c) After Listening Questions
Reactions

Concerns

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Key Findings

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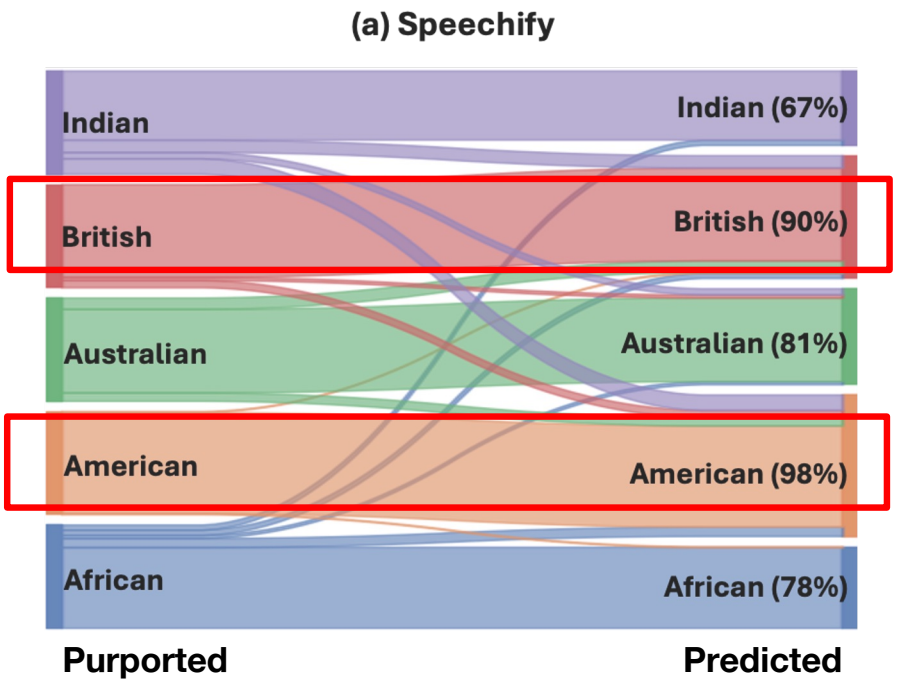

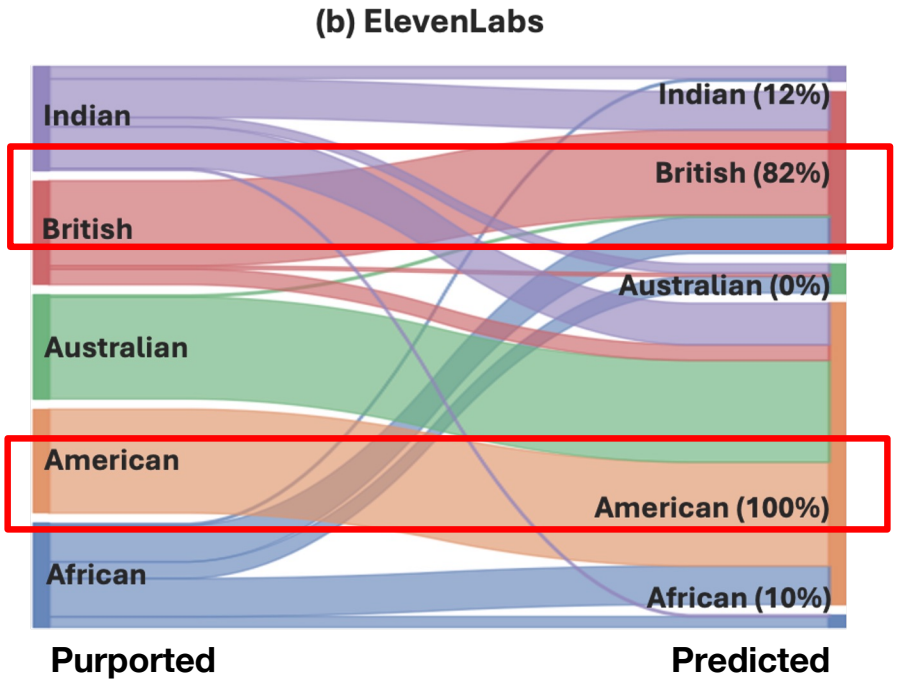

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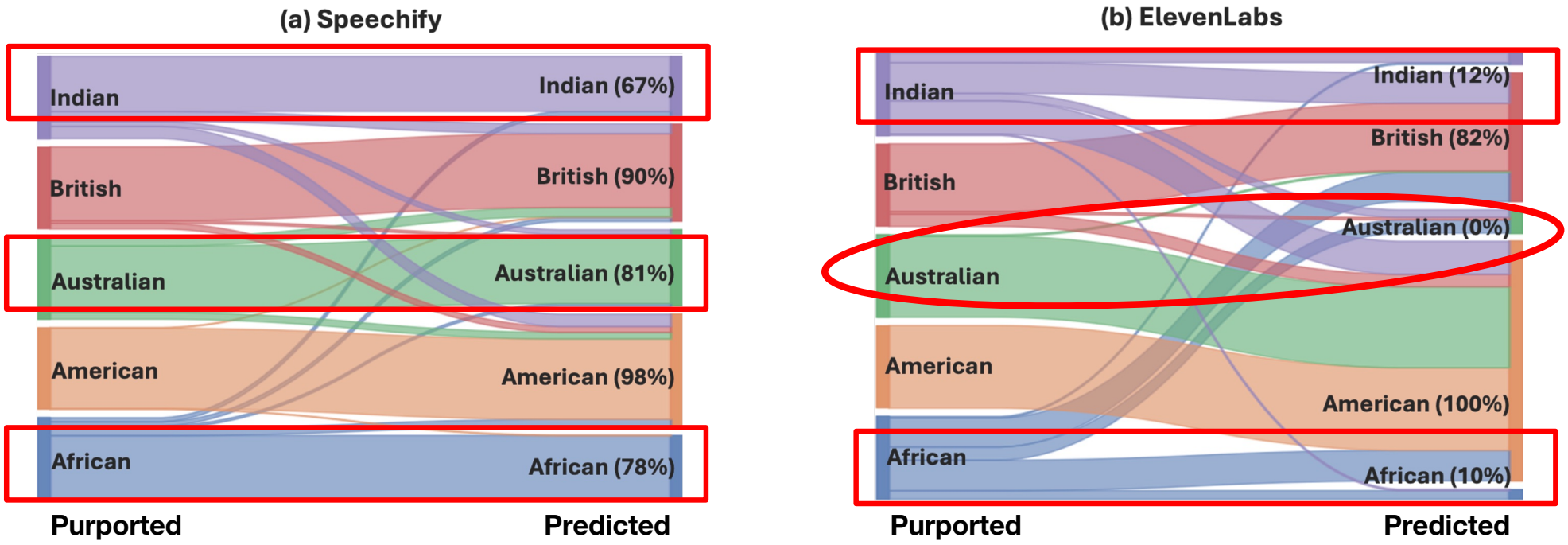

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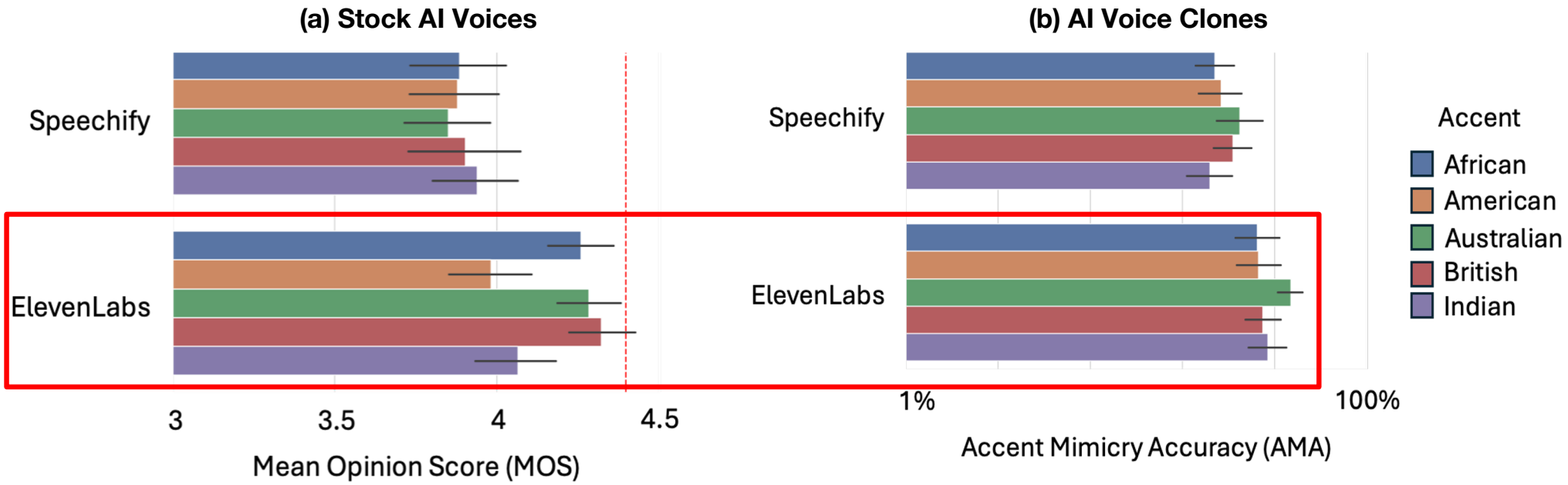

Excellent quality reached at baseline = 4.4 (Twilio and WayWithWords)

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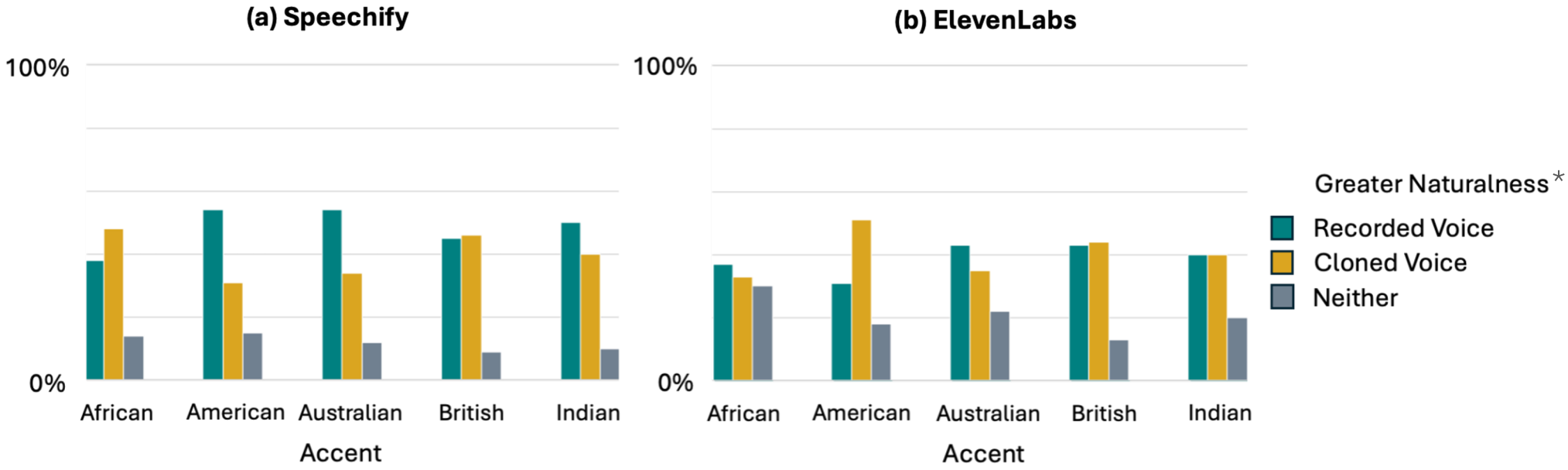

*Naturalness (i.e., human-sounding)

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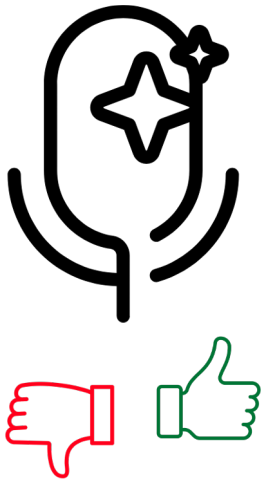

66.7% of responses **preferred the voice clone from ElevenLabs**, but 52% **favored a robotic AI voice clone.**

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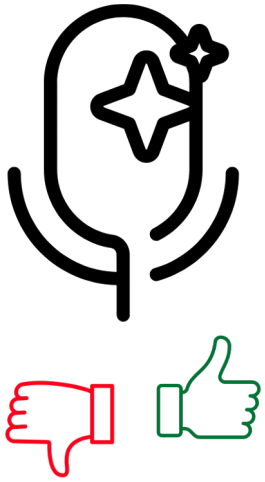

66.7% of responses **preferred the voice clone from ElevenLabs**, but 52% **favored a robotic AI voice clone.**

"*...I can definitely think of use cases, but like none that I'd like participate in myself like,* ***unless I became like a con artist****...*" - P25

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(4) *There are* ***deeper emotional and cultural dimensions*** *of how users interact with AI-generated versions of their own voices.*

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"...*just having those [American and British accents]. We just know that. Well,* ***maybe they were not meant for us. They were building them with some other people in mind***." - P18

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(4) *There are* ***deeper emotional and cultural dimensions*** *of how users interact with AI-generated versions of their own voices.*

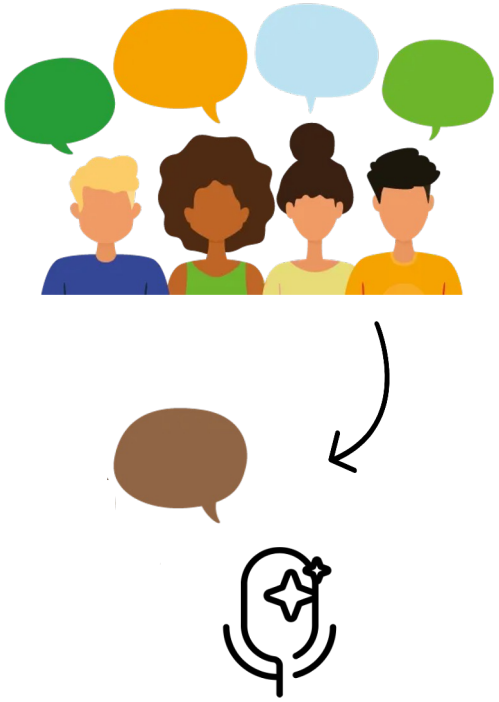

Image credits: crossroadsspeechtherapy.com

"*...****it sounded extremely typical of how, like, an Indian person speaks****. I definitely don't think that's how I speak.* ***It's not a representation of me****..." - P10*

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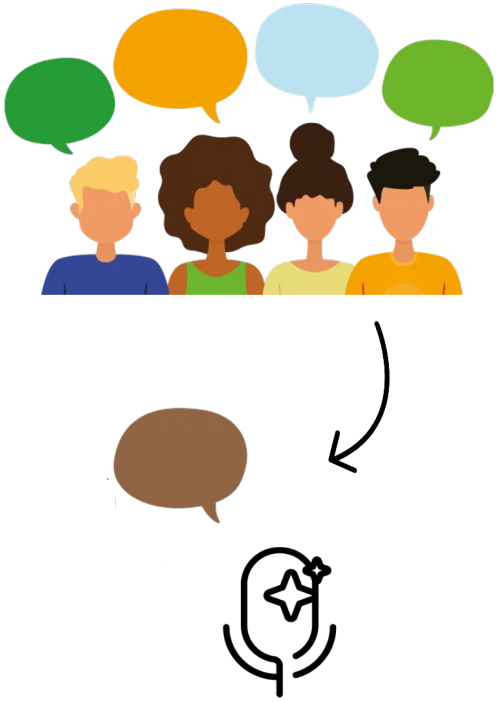
***(4)** There are **deeper emotional and cultural dimensions** of how users interact with AI-generated versions of their own voices.*



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"*...**it sounded extremely typical of how, like, an Indian person speaks**. I definitely don't think that's how I speak. **It's not a representation of me**...*" - P10

"***...**it sounded **more formal, more refined**... it's an accent I would **aspire** to speak with...*" - P15

Key Takeaways

***(1)** There are **disagreements in accent classification**, but **voices generated by ElevenLabs received higher ratings** for quality and cloning accuracy.*

↳ The need for **more accurate and culturally informed** accent designations.

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↳ The importance of **human or mechanically distinguishable** AI-generated speech.

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↳ The intricate connection between technical performance and user acceptance.

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↳ Reactions **tied to identity** reveal **tensions** between authenticity and aspiration.

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Developers: Improve Technical Performance

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Employers: Ensure Fair Treatment of Accent Diversity

Northeastern University UCONN UNIVERSITY OF CONNECTICUT

For more information, please refer to our paper.

“It’s not a representation of me”: Examining Accent Bias and Digital Exclusion in Synthetic AI Voice Services


Shira Michel


Sufi Kaur


Sarah Elizabeth Gillespie


Jeffrey Gleason


Christo Wilson


Avijit Ghosh