ICMI Costa Rica 2024

RMIT UNIVERSITY

TU Delft

Everything We Hear: Towards Tackling Misinformation in Podcasts

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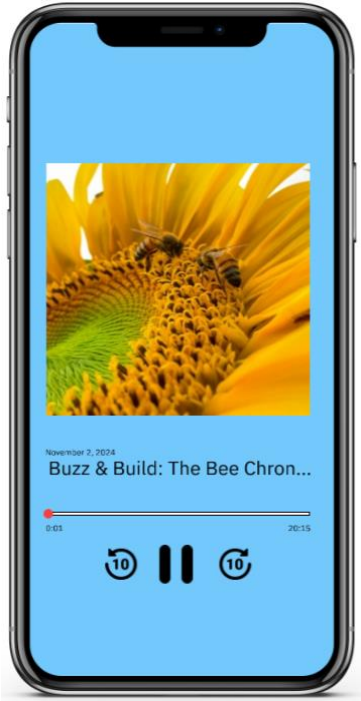
What's next...

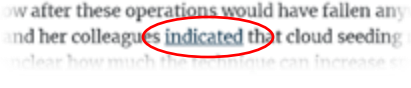
ADM+S ARC Centre of Excellence for Automated Decision-Making and Society

Acknowledgements

Podcast



Background



In-Text Citations [3]

Warning Labels [1,2]

VS

Notification Pings [5]

Chimes [6]

[1] Guo et al. Seeing is Not Believing: A Nuanced View of Misinformation Warning Efficacy on Video-Sharing Social Media Platforms, CSCW2 '23.
[2] Aaron S Kesselheim, John Connolly, James Rogers, and Jerry Avorn. 2015. Mandatory Disclaimers on Dietary Supplements Do Not Reliably Communicate the Intended Issues. Health Affairs.
[3] FactCheck.org https://www.factcheck.org/2024/10/baseless-claims-proliferate-on-hurricanes-and-weather-modification/
[4] Tobin et al. 2022. Why people listen: Motivations and outcomes of podcast listening. Plos one (2022).
[5] Stavros Garzonis, Simon Jones, Tim Jay, and Eamonn O'Neill. 2009. Auditory Icon and Earcon Mobile Service Notifications: Intuitiveness, Learnability, Memorability and Preference, CHI'09.
[6] Ke Duan, Xuedong Yan, Xiaomeng Li, and Junyu Hang. 2023. Improving Drivers' Merging Performance in Work Zone Using an In-Vehicle Audio Warning. Transportation Research Part F: Traffic Psychology and Behaviour 95

Problem

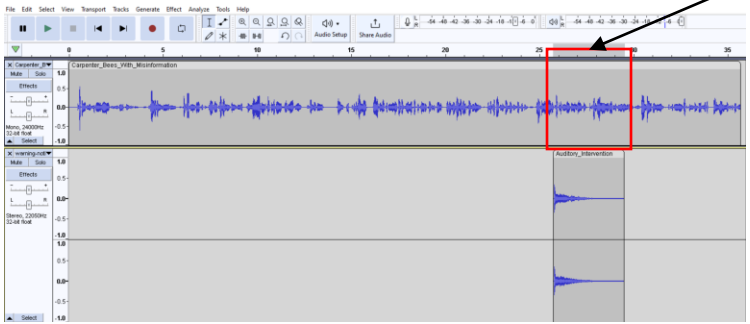
Given, a fact-checked podcast transcript:

Misinformation

"How can we warn users of misinformation in a podcast snippet ?"

Podcast Snippet with Misinformation

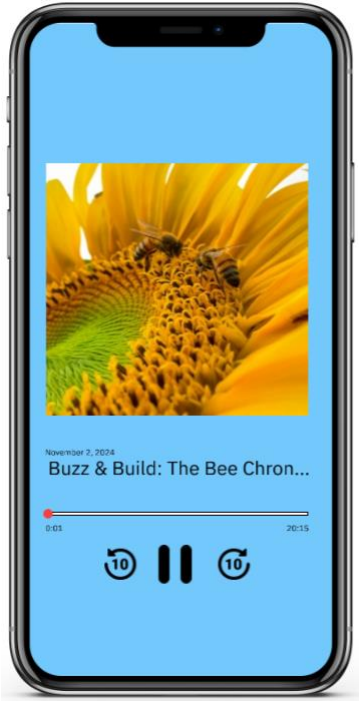
Podcast
+
Auditory
Intervention

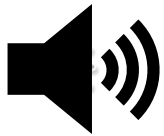


Proposed Solution

… carpenter bees **aren't always solitary..**

… carpenter bees are **more independent and solitary ..**

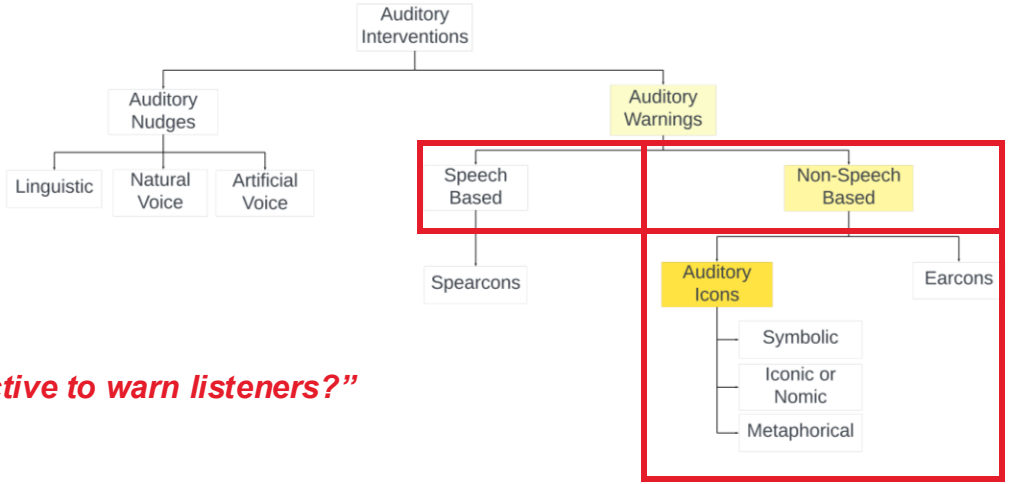




Auditory Interventions

Non-Speech-Based vs Speech-based [1,2,3]:

- more confidentiality
- speech independence
- wider applicability in different countries, languages, and dialects [1].

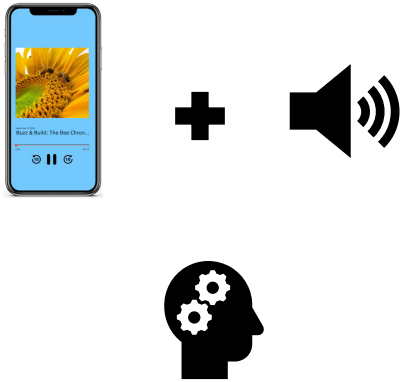


"Which type of auditory icon would be the most effective to warn listeners?"

"Where do we place the such interventions in a podcast ?"

[1] Zhaoli Lei, Shu Ma, Hongting Li, and Zhen Yang. 2022. The Impact of Different Types of Auditory Warnings on Working Memory. Frontiers in Psychology 2022
[2] Lai Jian Ming, Faieza Abdul Aziz, and Barkawi Sahari. 2008. A Study on Real-Time Auditory Feedback Technique in Manipulation Task. In 2008 International Symposium on Information Technology
[3] Michael A Nees and Eliana Liebman. 2023. Auditory Icons, Earcons, Spearcons, and Speech: A Systematic Review and Meta-Analysis of Brief Audio Alerts in Human-Machine Interfaces. Auditory Perception & Cognition (2023)

Research Questions



1. Can auditory interventions in podcasts assist users in recognizing misinformation?
2. What type of auditory intervention would be the most effective design choice?
3. Where do we position such auditory interventions in a podcast?

4. What is the impact of auditory interventions on listeners?
5. Can users conceptually map the auditory interventions to misinformation?
6. Does users' pre-existing beliefs/cognitive biases impact the effectiveness and perception of such interventions?

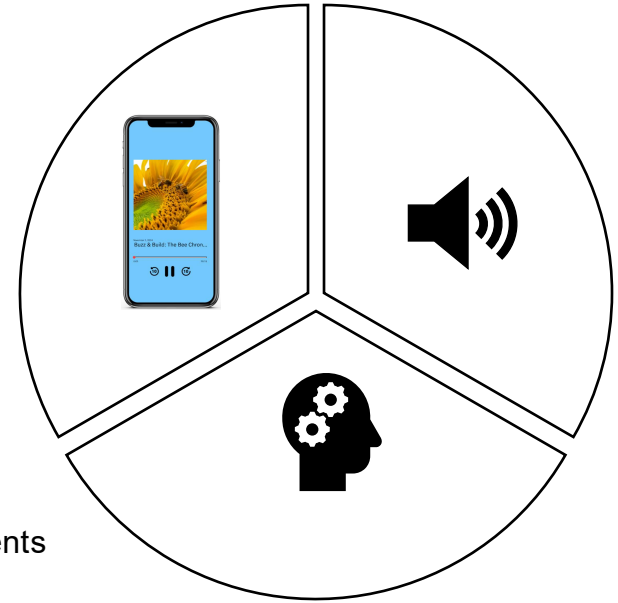
Experimental factors to consider

- Number of speakers
- Topic complexity
- Language comprehensibility
- Length of podcast
- Background music
- …

Towards controllable generation of synthetic podcasts

- Topical interest and familiarity
- Listening comprehension
- Physical/Neurological impairments
- Pre-existing belief/stance
- …

Towards understanding human factors in podcast misinformation



- Type
- Position
- Acoustic indicators (e.g., Pitch, Loudness, Sharpness, Tonality, Duration, Roughness)
- …

Towards exploring optimal acoustic attributes

Pilot (N=15)

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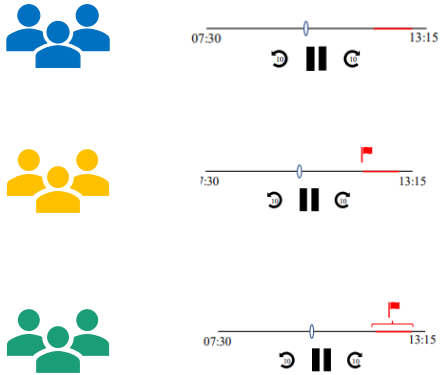

Misinformation Detection Rate

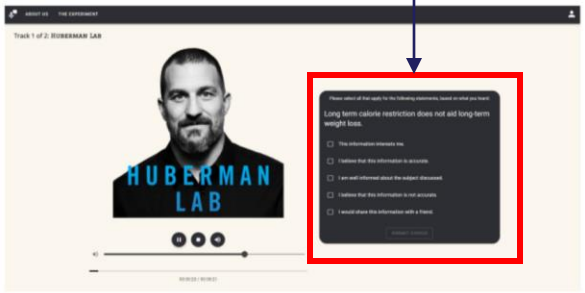

Figure 7: Listening Experience With Questions

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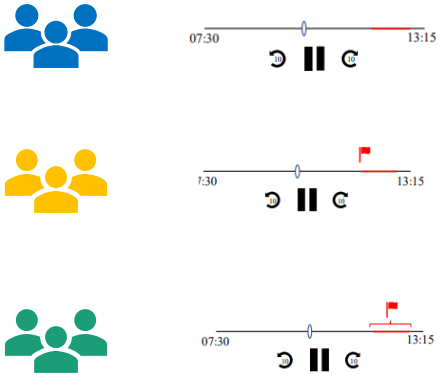

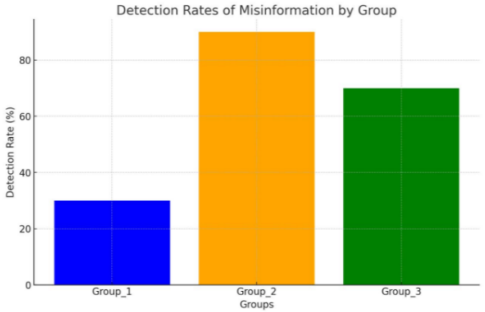

Key Findings:

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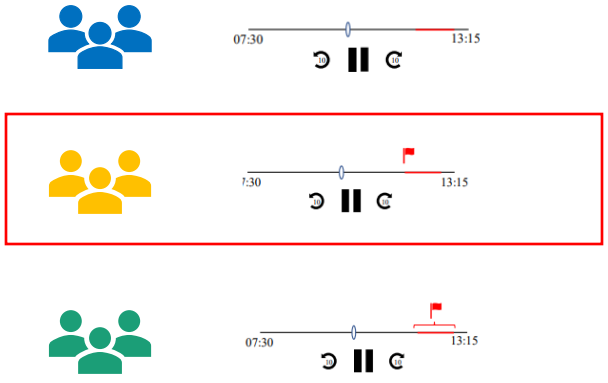

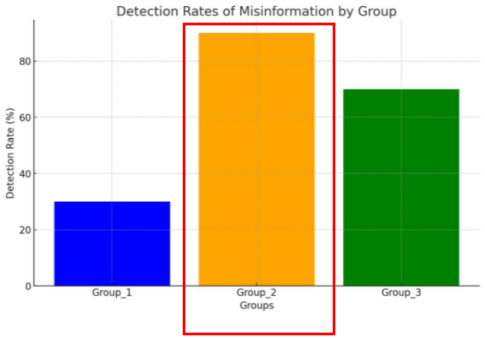

Key Findings:

- Higher misinformation detection in case of earlier warnings.

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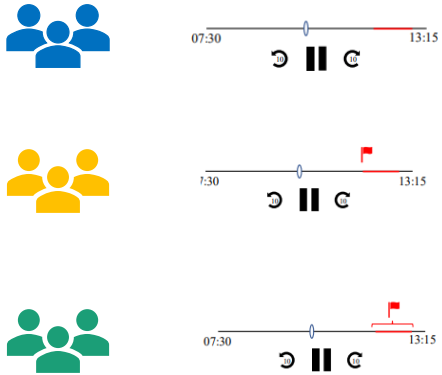
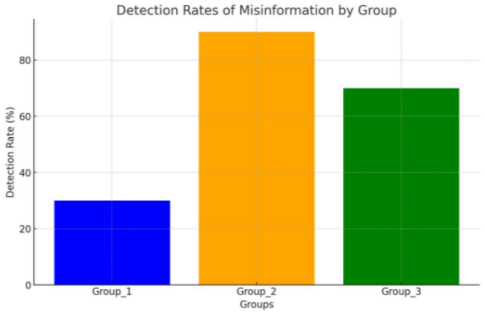
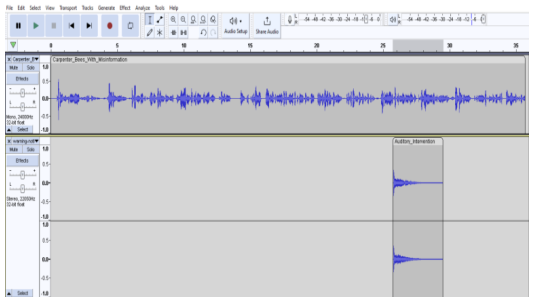




Key Findings:

- Higher misinformation detection in case of earlier warnings.
- Interventions were disruptive.
- But also hinted the listener that something was wrong.

Summary



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https://www.flaticon.com/free-icons/pilot

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CCC
Computing Community Consortium
Catalyst

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🔊 Everything We Hear: Towards Tackling Misinformation in Podcasts

Thank You!

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