COMP 3603: Human Computer Interaction

Presentation
Assignment 1

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Designing for Speech Practice Systems: How Do User-Controlled Voice Manipulation and Model Speakers Impact Self-Perceptions of Voice?

Presenter: Aidan Nagaur

Background

- Lisa Orii – 3rd year Ph.D. student at the Paul G. Allen School of Computer Science & Engineering at the University of Washington.

- Nami Ogawa – Currently a Ph. D Student at the University of Tokyo in Japan.

- Yuji Hatada- Research Associate at the University of Tokyo

- Dr. Takuji Narumi - Associate Professor at the University of Tokyo

Background

Publication Date: April 29th , 2022

Conference: CHI '22 Conference on Human Factors in Computing System, New Orleans, Los Angeles, USA

The study explores how users interact with voice manipulation software and model audio, focusing on how these tools affect self-perception.

Abstract

Contributions

- Designs effective speech practice systems with visual and auditory feedback

Findings

- Listening to model speakers significantly improved tone confidence
- Voice manipulation showed no significant self-perception improvements, but users appreciated the feedback mechanisms

Methodology
Initial Session

- Self-esteem, self-efficacy, and self-perceptions of voice and speech.
  - To establish baseline data on participants confidence and views.

Main Experiment

- Participants practiced public speaking under four conditions:
  - **Voice manipulation** (software allowing voice alteration)
  - **Model audio** (recordings of model speakers)
  - **Neither** or **both tools** used.

- **Self-assessments** completed before and after each condition to evaluate changes in voice and speech perception

Methodology
Final Session

- Participants evaluated:
  - Model audio quality.
  - Compared the four conditions experienced.
  - Provided final self-assessments of voice and speech.

- **Semi-structured interviews** conducted for in-depth feedback on
  - Voice manipulation tool
  - Model speakers
  - Influence on self-perception.

Results

- Participants had moderate levels of self-esteem and self-efficacy
- Model audio significantly improved tone confidence but had limited effects on other confidence measures.
- Voice manipulation did not significantly affect any of the self-perception measures, though it was preferred by participants in combination with model audio.
- The interaction effects between model audio and voice manipulation showed some promise but were not strong across the board.

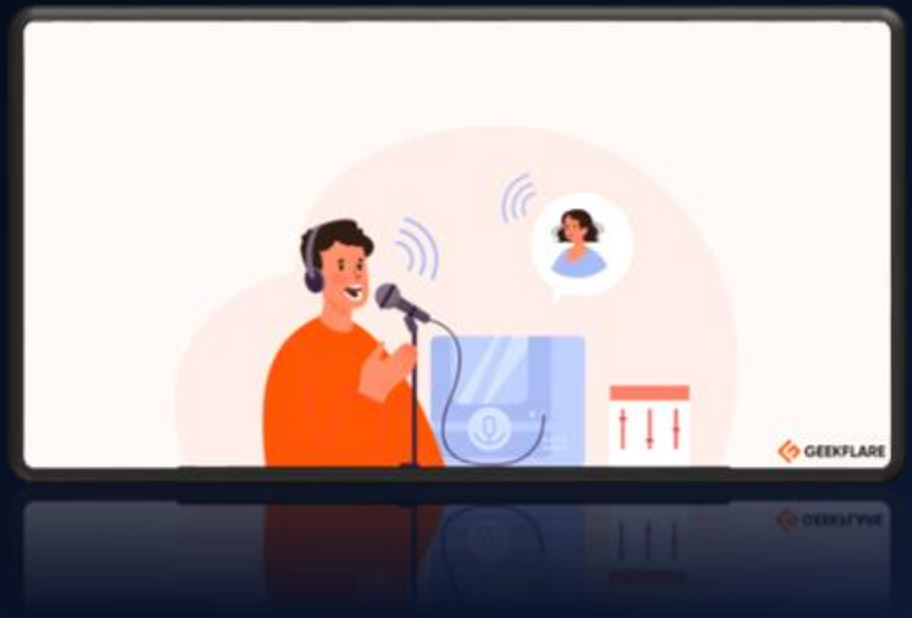
Discussion

Implications of Findings In HCI

- Model Audio significantly improves tone confidence.
- Voice manipulation alone had limited impact on self-perception.
- Combination of Model and Audio and Voice Manipulation are favoured by participants.
- User autonomy didn’t directly improve self-perception

Discussion
Significance In HCI

- **Multimodal feedback** is crucial in speech practice systems.
- **Balance user control** with **guided feedback** for effective learning.
- **Combine voice manipulation** and **model audio** to boost confidence and performance.



Limitations

- **Small sample size (n = 18)**
- **Short-term study**: No long-term effect analysis.
- **Self-assessments**: Potential response bias; need for objective measures.

Conclusion

MAIN TAKEAWAYS

- Model Audio significantly improves tone confidence.
- Voice manipulation alone shows limited effect, but valued for feedback.
- Combination of both tools prefered
- Balancing user control and expert guidance is important

RELEVANCE AND IMPACT

- Offers valuable design principles for future speech training technologies:
  - Public speaking training
  - Voice therapy
  - Language learning applications

The Influence of Human Factors on the Intention to Report Phishing Emails: Research Paper Analysis

Presented by: Isabell Munroe

Background

- Ioana Marin:
  - Affiliation: *Eindhoven University of Technology, Netherlands*
  - Contribution to the HCI field: *Empirical Studies in HCI*
- Luca Allodi:
  - Affiliation: *Eindhoven University of Technology, Netherlands*
  - Contribution to the HCI field: *Empirical Studies in HCI*
- Nicola Zannone:
  - Affiliation: *Eindhoven University of Technology, Netherlands*
  - Contribution to the HCI field: *Empirical Studies in HCI*
- Pavlo Burda:
  - Affiliation: *Eindhoven University of Technology, Netherlands*
  - Contribution to the HCI field: *Empirical Studies in HCI*

Publication Information

- Publication date: *April 19, 2023*
- Article Number: *620*
- Conference Number: *CHI' 23*

Abstract

- Main Objectives:
  - To identify and discuss the factors influencing phishing reporting behaviours.
  - To develop a framework to understand phishing reporting behaviours through reviewing existing theories and testing the researchers' hypotheses.
- Contributions:
  - An integrated view of how individual and organizational factors shape an individual's cybersecurity behaviours, and their intention(s) to report phishing emails.
  - A deeper understanding of how considering human factors influence positive cybersecurity behaviours and the intention to report phishing emails.
  - Theoretical and practical benefits which can help organizations to improve their overall security.

- Findings:
  - There is a strong relationship between an individual's positive cybersecurity behaviours and their intention(s) to report phishing emails.

Methodology

- Research Method:
  - An online survey was conducted via Amazon Mechanical Turk (AMT), with a sample size of 284 participants, where respondents were assessed via questionnaire to determine their cybersecurity practices, and inclination to report phishing emails.

- Data Collection Technique:
  - A 4-part survey which encompassed questions about:
    - Section 1: *Demographic information*
    - Section 2: *Personality traits, and routines relating to the workplace*
    - Section 3 & 4: *Beliefs, positive cybersecurity behaviour, and intention to report phishing emails*

Results

- Results:
  - The study implies that there is a strong correlation between an individual's positive cybersecurity behaviours, (particularly compliance and security assurance), and their intention to report phishing emails.

- Key Findings:
  - Individuals with higher levels of education, employed for a longer time, and consistently reported phishing emails, are more likely to exhibit positive cybersecurity behaviours that benefit an organization.
  - Longtime employees at a company that were victim to phishing emails in the past, and persistently reported phishing emails, are more inclined to do so.
  - Individuals who exhibit high levels of sportsmanship, are less likely to report phishing emails, to prevent creating additional work for others.
  - Human factors that infleunce an individual's general cybersecurity behaviours, might differ from the factors that impact specific cybersecurity behaviours.

Discussion

- Implications of Findings and Significance in HCI:
- A unified model for phishing reporting behaviours:
  - *Previous research has only addressed cybersecurity behaviours within the OCB characteristics for individuals and organizations, failing to account for factors like beliefs and personality traits. Thus, a cohesive model is needed to ascertain more consistent results.*
- Generic vs specific cybersecurity behaviours:
  - *Human factors that influence general and specific cybersecurity behaviours differ, thus researchers should be cautious when generalizing their findings.*

- The need for innovative training and awareness programs:
  - *Innovative training and awareness programs (e.g gamification, incentive programs, etc) can be used to increase employees' confidence and likelihood to execute positive cybersecurity behaviours, to enhance the organization's overall cybersecurity efforts.*

Limitations

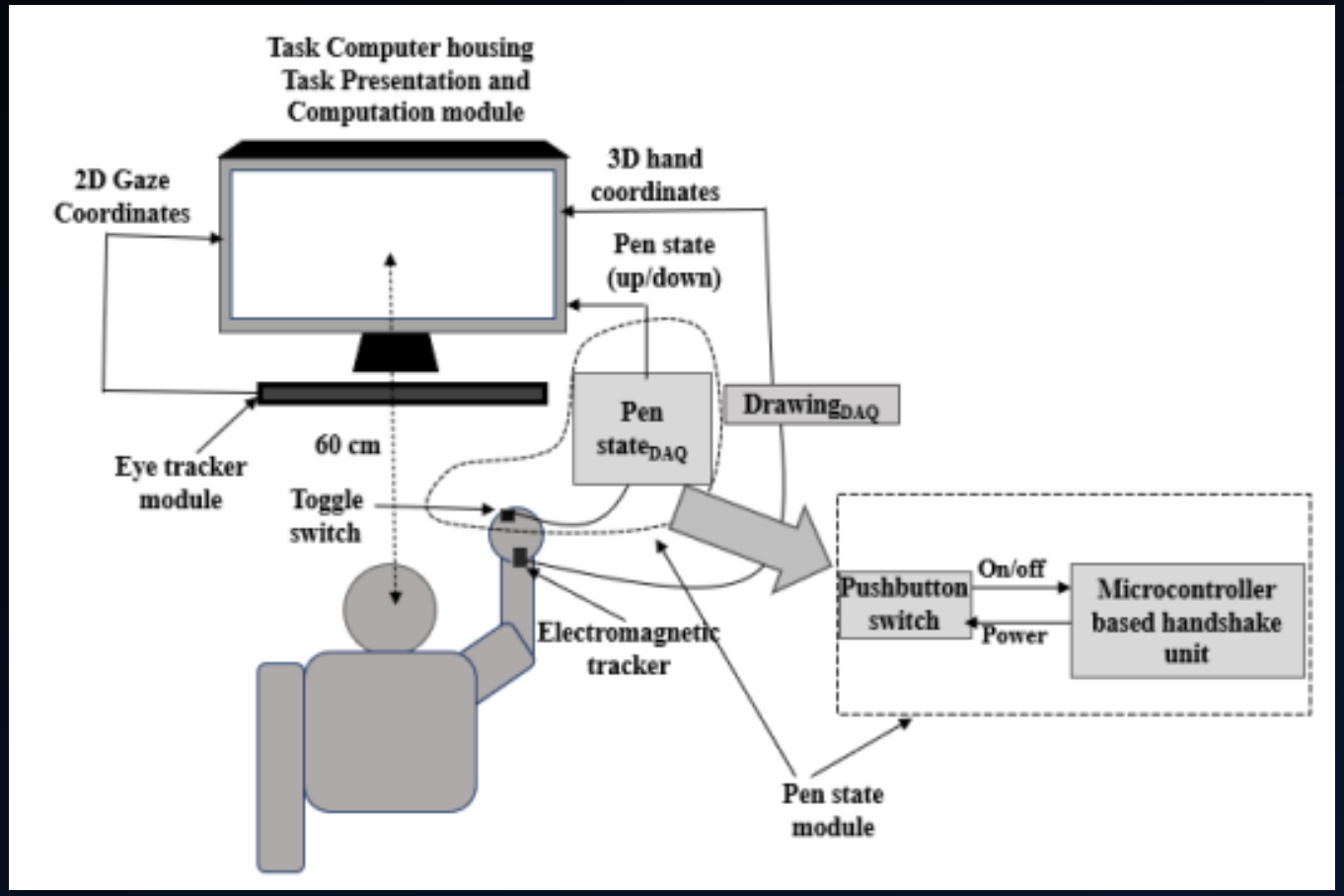
- US based study:
  - *Limited generalizability, may not apply to other countries.*
- Most participants were managers/senior managers:
  - *More likely to be targeted by phishing due to their position.*

Conclusion

- Main Takeaways:
  - *There is a strong correlation between an individual's positive cybersecurity behaviours, and their intention to report phishing emails.*
  - *Self-efficacy, altrusim, and subjective norms positively impacted phishing reporting intention.*
  - *Sportsmanship negatively impacted intention to report phishing emails.*
  - *Further research is needed to assess the efficacy of human factors in improving an organization's training and awareness programs and fostering a positive cybersecurity posture.*

- Relevance and Impact of the Research:
  - *Insight for future research and practical strategies for organizations to improve phishing reporting rates.*
  - *Insight into the theoretical and practical implications of human factors in the InfoSec context.*

- Assessment of Eye-hand Coordination using a Vertical Tracing Task on a Gaze-sensitive HCI Platform for children with Autism



Presenter: Anderson Singh

Background

Dharma Rane & Uttama Lahiri

- Affiliation: Professors, Doctors of Philosophy at the Indian Institute of Technology (IIT)
- ITT is known for research in Human-Computer Interaction (HCI), robotics, and neuroscience
- Both authors have worked extensively on assistive technologies and HCI platforms for individuals with developmental disabilities

Madhu Singh

- Affiliation: Director of the B.M. Institute of Mental Health
- Specializes in mental health services

Publication Information

- Publication date: 28th May 2024
- Conference: Proceedings of the ACM on Human-Computer Interaction (PACMHCI), Vol. 8, Issue ERTA
- Article No.: 224

Abstract

Objective: *The study aims to develop a Virtual Reality-based Automated Gaze-sensitive Tool (VRAT) for objectively assessing eye-hand coordination and gaze behavior in children with Autism Spectrum Disorder (ASD). Unlike traditional 2D methods, VRAT offers a more comprehensive evaluation by focusing on 3D tasks.*

Motivation: *Eye-hand coordination is essential for daily activities, and deficits in children with ASD can hinder tasks like reaching and drawing. Traditional assessments lack gaze-tracking and focus on 2D tasks, missing the complexity of 3D coordination.*

Findings: *the study suggests that children with ASD have significant challenges in eye-hand coordination and gaze patterns during 3D tasks, emphasizing the need for adaptive tools to support targeted interventions.*

Methodology

The VRAT system comprises four modules:

- **Eye Tracker Module**: Uses Tobii 4c to record 2D gaze coordinates.
- **Pen Tracker Module**: Utilizes an electromagnetic tracker to capture 3D hand movements translated into the VR environment.
- **Pen State Module**: A toggle switch setup to differentiate drawing states.
- **Task Presentation and Computation Module**: Displays a vertical tracing task and calculates various performance and gaze indices.

Participants: The study involved 20 children (10 with ASD and 10 typically developing) with no motor deficits, confirmed using the Social Communication Questionnaire (SCQ) and Social Responsiveness Scale (SRS).

Results

- **Eye-Hand Coordination**: Children with ASD showed significantly higher Tracing Offset (increased tracing error) compared to typically developing children, suggesting reduced coordination.

- **Gaze Behavior**: Children with ASD had shorter fixation durations on task-relevant areas and more dispersed gaze patterns, indicating atypical viewing patterns.

- **Hand-Gaze Synchronization**: A significant Hand-Gaze offset was observed in children with ASD, indicating less synchronization between hand and eye movements.

- **Correlation**: A strong negative correlation between fixation duration on task-relevant areas and tracing accuracy suggests that effective gaze behavior is crucial for better motor performance.

Discussion

- The findings underscore the need for gaze-sensitive technology in HCI, especially for neurodiverse populations like children with ASD. The VRAT system provides quantitative and objective assessments that can inform personalized interventions and adaptive therapies.

Limitations

- The study's limitations include a small sample size and the focus on a single type of VR task. Future research should involve a larger, more diverse participant pool and incorporate different types of tasks and additional physiological measures such as pupillary dilation and blink rate to provide a more comprehensive assessment.

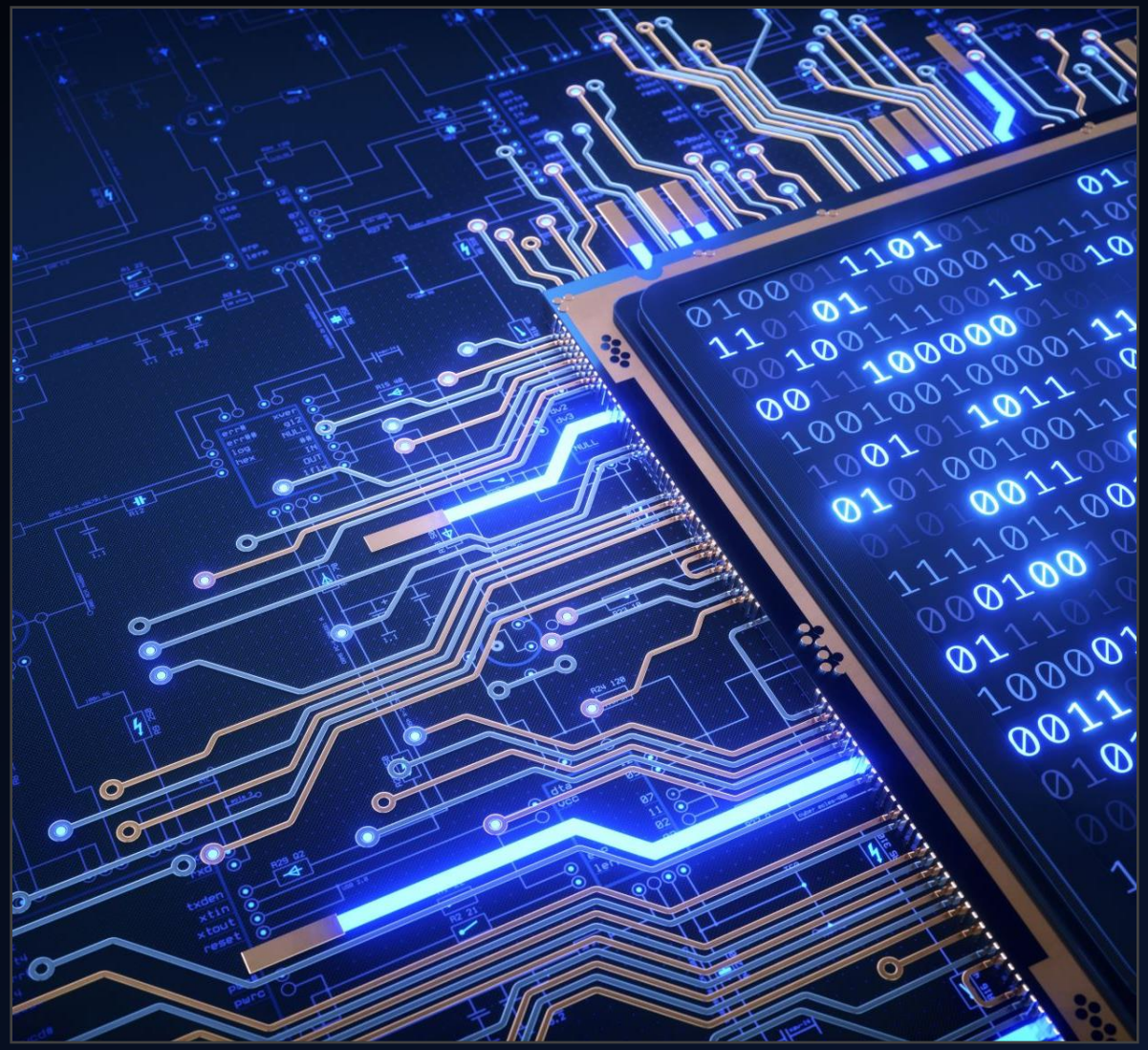
Conclusion

- The VRAT system is a promising tool for assessing eye-hand coordination and gaze patterns in children with ASD. It offers valuable insights for therapists and educators to design targeted interventions and therapies based on quantitative data, supporting the development of adaptive and personalized HCI systems.

DESIGNING FOR SPEECH PRACTICE SYSTEMS: HOW DO USER-CONTROLLED VOICE MANIPULATION AND MODEL SPEAKERS IMPACT SELF-PERCEPTIONS OF VOICE?

THE INFLUENCE OF HUMAN FACTORS ON THE INTENTION TO REPORT PHISHING EMAILS: RESEARCH PAPER ANALYSIS

ASSESSMENT OF EYE-HAND COORDINATION USING A VERTICAL TRACING TASK ON A GAZE-SENSITIVE HCI PLATFORM FOR CHILDREN WITH AUTISM



THANK YOU FOR YOUR TIME.