

# Tobias Weinberg

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## — Profile Summary

I am a PhD Student at [Matter of Tech Lab](#) advised by [Prof. Thijs Roumen](#) and co-advised by [Prof. Stephanie Valencia](#) from UMD, dedicated to advancing Augmentative and Alternative Communication (AAC). My research develops AI-powered systems that move beyond transactional speech to support *expressive participation* in conversation. I design and study “amorphous AAC” technologies that adapt fluidly to users’ agency, identity, and privacy needs, enabling overlooked forms of expression such as humor, interjections, backchanneling, and culturally resonant voices. My work combines technical prototyping with autoethnography and co-design, aiming to create AAC systems that co-evolve with their users, preserving intent, individuality, and presence in real time.

**Areas of interest:** accessibility, AAC, expressive communication, LLMs, human-AI interaction, human-centered machine learning, and HCI.

## — Education

### Ph.D. Computer Science

2023 - Present, New York City, NY

Cornell University / Cornell Tech

Matter of Tech Lab advised by Prof. Thijs Roumen

My work focuses on enhancing expressivity in augmentative and alternative communication (AAC) systems, particularly in human-AI interaction. I am exploring the balance between agency and efficiency to develop more adaptive and expressive AAC technologies

### Bachelor of Science in Mechanical Engineering

2019 - 2023, Haifa, Israel

Technion - Israel Institute of Technology

GPA: 86.7/100

Core Courses: Control Theory, Kinematics, Dynamics, and Control of Robots, Machine Learning For Physiological Time Series Analysis

## — Publications at Top-tier HCI Conferences

**Tobias Weinberg**, Claire O'Connor, Ricardo E. Gonzalez Penuela, Stephanie Valencia, Thijs Roumen. One Does Not Simply ‘Mm-hmm’: Exploring Backchanneling in the AAC Micro-Culture. [\[Project page\]](#)  
ASSETS 2025

**Tobias Weinberg**, Kowe Kadoma, Ricardo E. Gonzalez Penuela, Stephanie Valencia, Thijs Roumen. Why So Serious? Exploring Timely Humorous Comments in AAC Through AI-Powered Interfaces. [\[Project page\]](#)

CHI2025 - Best Paper Honorable Mention Award (best 5%) 🏆

CHI2025 - Jury Best Demo Award 🏆

Amritansh Kwatra, **Tobias Weinberg**, Ilan Mandel, Ritik Batra, Peter He, Francois Guimbretiere, Thijs Roumen. SplatOverflow: Asynchronous Hardware Troubleshooting. [\[project page\]](#)

CHI2025 - Best Paper Honorable Mention Award (best 5%) 🏆

## — Full Papers Pre-Prints

**Tobias Weinberg**, Ricardo E. Gonzalez Penuela, Stephanie Valencia, Thijs Roumen. I, Robot? Socio-Technical Implications of Ultra-Personalized AI-Powered AAC; An Autoethnographic Account. 2025 ArXiv Pre-print. (in submission CHI26) [[project page](#)]

**Tobias Weinberg**, Aaleyah Lewis, Thijs Roumen, Jennifer Mankoff. Whose Voice Is It Anyway?: Exploring Cultural Identity in AAC Voice Generation (in preparation for ASSETS26)

Shuo Feng , Lavenda Yifan Shan , Xuening Wang , Ritik Batra, **Tobias Weinberg**, and Thijs Roumen. CAMEleon: Interactively Exploring Craft Workflows in CAD. 2024 ArXiv Pre-print. (in submission at CHI26)

## — Work Experience

### University of Washington / Research Assistant

Summer 2025, Seattle, WA

Working with Prof. Jennifer Mankoff on designing AI-powered AAC systems that enable multicultural expression. This project explores how people with speech disabilities can represent their cultural voice identities through agentic tools that capture diverse linguistic backgrounds, communication norms, and cultural practices.

### YAI Seeing Beyond Disability / Intern

2024 - 2025, New York, NY

At YAI, I developed and implemented a data-driven smart home platform for group homes, equipping staff with real-time insights to enhance care, safety, and efficiency for individuals with disabilities. My role encompassed full-stack web development, IoT integration, and real-time data processing and visualization.

### Matter of Tech Lab at Cornell Tech / Research Intern

2022 - 2023, Remote from Haifa, Israel

Working with Prof. Thijs Roumen at Matter of Tech lab, we researched how to leverage digital fabrication using ultrasound manipulation. Including contactless fluid 3D manipulation using ultrasound, Unity simulations, and design and engineering of a system for dispensing droplets on demand.

### FAR Lab at Cornell Tech / Research Intern

Summer 2022, New York, NY

Working with Prof. Wendy Ju at FAR lab where we research human-robot interaction. I developed a robot control interface using computer vision, FLASK, and MQTT for human-robot interaction studies. I implemented ROS navigation algorithms with LiDAR and explored 3D modeling and rapid prototyping for a clay 3D printer.

## — Awards and Honors

- Funded by Google Research Grant in 2025
- Jury Best Demo Award CHI'25 (#1 demo) - Why So Serious? Exploring Humor in AAC Through AI-Powered Interfaces 🏆
- Honorable Mention Award CHI'25 (best 5% of papers) - Why So Serious? Exploring Humor in AAC Through AI-Powered Interfaces 🏅
- Honorable Mention Award CHI'25 (best 5% of papers) - SplatOverflow: Asynchronous Hardware Troubleshooting 🏅
- Rubinstein PiTech PhD Innovation Fellow (Fall'24-Spring'25)
- Siegel Public Interest Technology Impact Fellowship (Summer 2024)
- Amazon cloud computing grant from Cornell Data Science Center (15K)
- Dean's List Honors  
Faculty of Mechanical Engineering at the Technion Top 15% of the class  
Spring 2021, Winter 2022, and Spring 2023

