Tobias Weinberg

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⎯ Profile Summary

I am a PhD Student at Matter of Tech Lab with Prof. Thijs Roumen, dedicated to advancing augmentative and alternative communication (AAC) technologies, my research centers on developing systems to seamlessly integrate non-informative speech such as humor, interjection words/sounds, reading poetry, etc, enhancing expressivity for individuals with speech and motor impairments.

Areas of interest: accessibility, disability, 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 supervised by 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 in Science 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, Kowe Kadoma, Ricardo E. Gonzalez Penuela, Stephanie Valencia, Thijs Roumen. Why So Serious? Exploring Humor in AAC Through AI-Powered Interfaces, CHI2025 (in submission)

Amritansh Kwatra, **Tobias Weinberg,** Ilan Mandel, Ritik Batra, Peter He, Francois Guimbretiere, Thijs Roumen. SplatOverflow: Asynchronous Hardware Troubleshooting, CHI2025 (in submission)

⎯ Research Experience

YAI Seeing Beyond Disability / Intern
May 2024 - Present, 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's lab where we research 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's 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.

JERICCO Project at Aerospace faculty / Simulations & Control Engineer   Spring 2022, Haifa, Israel

JERICCO is a mission to launch and operate the first ever student-designed nanosatellite in lunar orbit, in a joint effort between the Technion's Aerospace faculty and Israel Aerospace Industries (IAI) set to launch in 2025.

Supervisor: Niko Adamsky (IAI)

I created a system to simulate space climate conditions, communications, and power systems to verify the design choices of the satellite. I designed a **control algorithm** for reaction wheels to allow space navigation.

UAV Center Lab at Technion / Laboratory & Research Assistant   2019 - 2023, Haifa, Israel

As a Laboratory & Research Assistant at the UAV Center Lab, I assembled and **optimized electronics** for autonomous defense drones, **designing and testing** flight-critical components for reliability. I also specialized in **CAD-based 3D modelin**g and **3D printing** to rapidly prototype and produce high-precision parts for lab projects.

— SKILLS

Machine Learning   Full-Stack Developer   Computer Vision   Human-Computer Interaction

Robotics   3D Modeling   Rapid Prototyping   Embedded Systems

Programming languages: Python, C, C#, JavaScript, Java, PHP, Arduino, MATLAB

Fabrication tools: 3D printing, laser cutting, CNC, Mechanical analysis

Design tools: CREO Parametric, Rhino, Solidworks, Fusion 360

— Awards And Honors
Siegel Public Interest Technology Impact Fellowship
Amazon cloud computing grant from Cornell Data Science Center (15K)

Dean's List honors   Spring 2021, Winter 2022, and Spring 2023
Faculty of Mechanical Engineering at the Technion Top 15% of the class