

Danessia Zan

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EDUCATION

Georgia Institute of Technology , Atlanta, Georgia	GPA: 3.77/4.00
<i>M.S. Biomedical Engineering / Neuroengineering Concentration</i>	Expected May 2028
<i>B.S. Biomedical Engineering / Minor in Industrial Design</i>	Expected May 2027

Nanyang Technological University, Singapore, Singapore
Chemical and Biomolecular Engineering / Spring 2026 Exchange Program

Relevant Coursework: Biostatistics, Systems Physiology, Intro to BME Design, Biomedical Systems Modeling, Circuit Analysis Lab, Biomechanics, Materials Science Principles, Microfluidic Applications, Human Factors in Design, Visual Design Thinking, Computing for Engineers, Multivariable Calculus, Organic Chemistry, Quantum Engineering Physiological Lab

SKILLS

CAD and Design Software	SolidWorks, Fusion 360, KeyShot Studio, VRED Pro, Adobe Photoshop, Autodesk Maya, Illustrator, Figma, Sketch, Canva, ChemDraw
Productivity Software	Microsoft Office, Microsoft Teams, Slack, Google Workspace, Google Gemini, GitHub, DropBox, Notion
Programming and Data Analysis	MATLAB, Python (Pandas, NumPy, MNE), C++, Jupyter Notebook, Excel, XCode, Claude, n8n
Hardware	3D printing, laser cutting, oscilloscope, waveform generator, digital multimeter, impedance analyzer, band saw, soldering, CNC Mill, waterjet, lathe
Laboratory	Pipetting, gel electrophoresis, cell culturing, fluorescence microscopy, western blotting, titrations
Technical Skills and Principles	Circuit design, product design, rapid prototyping, verification testing, ISO 13485, procedure development, design history files (DHF), design of experiments (DOE), design quality assurance (DQA)
Languages	English (native), Romanian (native), Italian (intermediate), Japanese (beginner)

ENGINEERING EXPERIENCE

Sonic Concepts, Inc. Bothell, WA	May 2026 – Aug 2026
- Executed 30+ acoustic and electrical calibrations on high-intensity focused ultrasound transducers and related systems using MATLAB automation and electronic test equipment, supporting device characterization and quality assurance - Designed and modified 10+ laboratory test fixtures in SolidWorks, drafting engineering drawings and fabricating 3D-printed components to improve acoustic calibration and efficiency of transducer power output processes - Standardized transducer labeling conventions across 6 product lines, improving identification consistency, streamlining internal workflows, and reducing the risk of transducer mislabeling - Authored 7 standardized engineering procedures for hardware characterization and calibration workflows, improving test repeatability and reducing engineering time by up to 10 hours per procedure	

RESEARCH EXPERIENCE

Traynelis Lab at Emory University Atlanta, GA	Aug 2025 – Present
- Investigate effects of ketamine administration on dendritic and dendritic spine morphology in Thy1 fluorescent mouse models - Utilize high signal-to-noise fluorescence imaging to visualize fine neuronal structures, including dendritic spines implicated in learning and memory - Conduct controlled ketamine vs. additional subset experiments followed by brain fixation, sectioning, and neuronal imaging	
Structured Information for Precision Neuroengineering Lab Atlanta, GA	Aug 2024 – Present
- Analyze patient gait movement and joint angles through Vicon, OpenSim, and Motek platforms to process biomechanical data displaying differences between healthy and MDD participants - Develop MATLAB (EEGLAB) and Python signal-processing workflows to detect stimulation pulses in patients with epilepsy - Process and visualize high-dimensional physiological recordings to identify stimulation events and support reproducible analysis of neural and behavioral data	
Quesify.net Remote	Dec 2025 – Jan 2026
- Developed Python-based computational models and scripts of GABAergic synaptic activity in Brian2, systematically varying model parameters and analyzing the resulting membrane-voltage and inhibitory postsynaptic potential data - Developed reproducible simulation code and GitHub documentation to support standardized analysis and collaborative computational neuroscience research	
FRIS, Tohoku University Sendai, Japan	May 2025 – Aug 2025
Developed a novel fabrication method for twisted microfluidic devices (thermal drawing + CNC milling) and improved mixing efficiency of fluid streams by varying device aspect ratio, eccentricity, and pitch; fabricated 50+ prototypes	

- Performed EDC/NHS coupling and click chemistry procedures to develop surface modification methods for dynamic monitoring of neurochemical substances (e.g., dopamine, serotonin) to maintain balance within the brain

Global Assistive Technology Innovation, Georgia Tech | Atlanta, GA

Aug 2024 – Dec 2025

- Designed and prototyped 2 models of braille slate/stylus DIY kits that were demonstrated in an on-site workshop in Kigali, Rwanda to help bridge the gap between people with disabilities and manufacturers of assistive technology in sub-saharan Africa

PUBLICATIONS

Shunsuke Kato, **Danessia Zan**, To-En Hsu, Ricardo Arturo Lopez de la Cruz, Tomoki Saizaki, Jérôme Adrien, Eric Maire, Amy Q. Shen, Yuanyuan Guo; Programmable Twisted Microchannels in Polymer Fibers via Rotational Thermal Drawing for Enhanced Micromixing. *ACS Appl. Mater. Interfaces* 16 September 2026; 18 (36): 50018–50026.

<https://doi.org/10.1021/acsami.6c06952>

POSTER PRESENTATIONS

Danessia Zan, Shunsuke Kato, Yuanyuan Guo. Enhancement of mixing efficiency through fabrication of twisted microstructure in thermally-drawn fiber. Nakatani RIES Symposium, Atlanta, GA., 2025.

Danessia Zan, Dhruv Nadkarni, Alexander Lamb. Experience in the AEMB MINDS design program: design of *Sound-Sight*. BMES Annual Meeting, San Diego, CA., 2025.

TEACHING EXPERIENCE

BMED2250 Teaching Assistant | Atlanta, GA

Aug 2026 – Present

- Grade and provide constructive feedback on assignments for 200 biomedical engineering students, ensuring consistency with course rubrics and learning objectives
- Collaborate with course instructors and fellow teaching assistants to standardize grading practices, address student questions, and maintain consistency across a large-enrollment course

Knack Tutor | Atlanta, GA

Nov 2024 – May 2025

- Provided personalized and accessible tutoring to 7 students a semester taking Calculus and Biomedical Engineering courses, assisting them in understanding key concepts of course material and providing thorough feedback on their progress

PROJECTS

WayFair AI Automation Externship - UX/AI Developer

Sep 2026 – Present

- Design an auto-updating dashboard and visual tools in Google Sheets to turn complex AI trend data into actionable insights for category managers
- Engineer AI workflows using n8n and Google Gemini to streamline market analysis, competitor tracking, and content generation for internal stakeholders

Adaptive Switch Controller

Apr 2025 – Dec 2025

- Designed and fabricated an Arduino-based adaptive controller integrating custom circuitry, soldered components, and mechanical interfaces to enable electronic control through minimal wrist and hand movement

Improved Neonatal CPAP Mask

Aug 2025 – Dec 2025

- Developed improved version of non-invasive neonatal nCPAP mask to reduce air leakage and nasal trauma, ensuring maximum airflow for premature infants; operated Fusion360 for 3D-modeling mask components and 3D-printing for mask strap mechanisms

BreathaBear the Hugger

Jan 2025 – May 2025

- Created a working prototype of a medical device intended to measure neck muscle activity (bandpass filter applied on FFT graphs for analysis) in asthmatic students and ultimately to provide alerts when detecting incoming asthma attacks

Sound-Sight

Nov 2024 – Sep 2025

- Led end-to-end development of a wearable bone-conduction hearing device, translating user needs into engineering requirements through concept generation, CAD, electrical design, and physical prototyping
- Integrated mechanical and electrical subsystems, including bone-conduction hardware, circuitry, and bandpass filtering, while balancing device performance, manufacturability, and technical feasibility; poster presentation at 2025 BMES Conference

LEADERSHIP AND SERVICE

Georgia Tech MILL Makerspace - Characterization Staffer

Aug 2026 – Present

- Operate and gain hands-on experience with materials characterization techniques, including scanning electron microscopy, optical microscopy, and spectroscopy, to evaluate material structure, morphology, and composition
- Support Georgia Tech students and researchers in the safe operation and application of characterization equipment for coursework, research, and engineering design projects
- Assist with day-to-day laboratory operations, equipment maintenance, and troubleshooting within an open-access, student-run materials science makerspace

Georgia Tech BME Department - BME Ambassador	Jan 2025 – Present
– Represent the Biomedical Engineering department to prospective students, families, and visitors, communicating technical programs, research opportunities, and department resources to diverse audiences	
Georgia Tech Tikkun Olam Makers - VP Outreach Chair	Aug 2024 – Present
– Directing a cross-functional team of designers and engineers to develop Assistive Technology (AT), demonstrating leadership, teamwork, and stakeholder engagement for the dissemination of AT to local communities in the Atlanta area	
– Foster partnerships with local organizations to identify accessibility needs and connect end users with customized AT solutions	
Georgia Tech BMES - Mentorship Chair	May 2025 – May 2026
– Led the Mentorship Committee, organized the Welcome to BME Day and other early-semester events, and coordinated logistics and outreach for the BMES chapter on Georgia Tech’s campus	
– Facilitated 20 mentorship pairings a semester, providing younger biomedical engineering students insights into the opportunities offered by the BME department	

AWARDS AND HONORS

Georgia Tech <i>DREAMS Scholarship Recipient</i>	Aug 2026 – Present
Georgia Tech <i>Zell Miller Scholarship Recipient</i>	Aug 2023 – Present
Georgia Tech <i>Nakatani RIES Fellowship</i>	May 2025 – Aug 2025
Georgia Tech <i>International Plan Scholarship Recipient</i>	May 2025 – Aug 2025
Georgia Tech <i>Women in Engineering Scholarship Recipient</i>	May 2024 – May 2025
Alpha Eta Mu Beta Honor Society <i>MINDS Scholar</i>	Nov 2024 – Sep 2025

PERSONAL INTERESTS

Nature exploration, summiting mountains, national parks, travel, rowing, competitive swimming, chess, acrylic painting, playing piano, trying different matcha flavors, learning new languages