

# SOFIA KARDOIK

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## EDUCATION

### University of Michigan

Ph.D. Student in Electrical and Computer Engineering  
Signal Processing and Machine Learning in Biomedical Imaging

**Ann Arbor, MI**

*Expected Graduation: May 2028*

*GPA: 3.89/4.00*

### University of Texas

Bachelor's of Science in Electrical and Computer Engineering

**Austin, TX**

*May 2023*

*GPA: 3.75/4.00*

## SKILLS

**Programming Languages:** Python, Julia, MATLAB, C/C++, ARM Assembly

**Tools:** Linux, Git, Keil, Jupyter Notebook

**Languages:** fluent in Russian, some understanding of Hebrew

## RESEARCH EXPERIENCE

### fMRI Research Lab

**January 2024 – Present**

- Conducted an extensive literature review on denoising techniques in fMRI using techniques in probability theory, under the supervision of Dr. Doug Noll and Dr. Jeff Fessler

### Computational Sensing and Imaging Research Lab

**September 2021 – May 2023**

- Undergraduate researcher working under Dr. Jon Tamir
- Generated motion corrupt brain images using linear rotation and translation methods in k-space for data driven retrospective motion correction
- Exploring effects of mixed precision training on MRI reconstruction problems

### REU Smart and Connected Communities; Undergraduate Researcher

**June 2021 – August 2021**

- National Science Foundation funded undergraduate research. Explored human perception-based recognition of maritime vessel activities.

## CONFERENCE PROCEEDINGS

Levac, B., Kumar, S., Kardonik, S., Tamir, J., "FSE Compensated Motion Correction for MRI Using Data Driven Methods", 25th International Medical Image Computing and Computer Assisted Intervention, 2022,  
<https://doi.org/10.48550/arXiv.2207.00656>

## WORK EXPERIENCE

### Aurora Flight Sciences, A Boeing Company; Software Engineering Intern

**May 2022 – August 2022**

- Built a flight simulator and interface for data collection of a commercial flight to research pilot's fatigue
- Wrote a UI in Python to visualize a pilot's gaze around the flight simulator
- Conducted a literature review of ML models that use heart rate variability, blinking rate, and workload to detect fatigue during a prolonged flight

### Uhnder, Inc.; Software Intern

**June 2020 – August 2020**

- Calibrated and tested different versions of radars that are sent to clients for industry use
- Revised python code for the company's expanding software updates
- Trained new technicians on calibration procedure and wrote a guide for employees to follow

## PROJECTS

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### Senior Design

- Designing a network of non-invasive wearable sensors to detect and monitor dehydration and heat stroke
- Using ECG, galvanic skin response, and body temperature sensors

### Final Embedded Systems Project

- Implemented a game from scratch called “Binary Expansion Hero” on a microcontroller board to mimic the popular game “Guitar Hero”: <https://www.youtube.com/watch?v=58gajYndY4E>

## EXTRACURRICULARS

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### Women in Electrical and Computer Engineering (WECE)

- Attended networking gatherings with ECE faculty to learn about their experience in academia
- Sought connections with other distinguished graduate women in the field

### UMich Club Tennis

- Successfully secured membership at a top 10 nationally ranked tennis club, demonstrating strong technical skill and strategic gameplay
- Built a supportive network with fellow club members while fostering a community of sportsmanship

**Relevant Coursework:** Machine Learning, Optimization in Signal Processing and ML, Matrix Methods for Signal Processing, Probability and Random Processes, Medical Imaging Systems, Real-Time Digital Signal Processing, Algorithms, Operating Systems, Computer Architecture, Digital Image Processing, Embedded Systems, Discrete Math