# Aditya Krishna

adkris@uw.edu | aditya-uw.github.io | linkedin.com/in/aditya-uw

## Professional Summary

Electrical Engineering student at the University of Washington with experience studying signal processing, machine learning, acoustics, and auditory neuroscience, interested in developing acoustic sensing technologies.

## Education

**University of Washington** Seattle, WA
*Bachelor of Sciences, Electrical Engineering (Neural Engineering & Signal Processing)* *June 2024*

- Overall GPA: 3.77 / Major GPA: 3.88
- 2022-2023 Academic Annual Dean's List

## Honors and Awards

**Undergraduate Research Conference Travel Award** Office of Undergraduate Research
*University of Washington, Seattle* *Spring 2024*

**ECE DEI Conference Travel Award** Electrical and Computer Engineering DEI Committee
*University of Washington, Seattle* *Spring 2024*

**Mary Gates Endowed Research Scholar** Mary Gates Endowment for Students
*University of Washington, Seattle* *Winter 2023*

## Technical Skills

**Programming Languages**: Python, MATLAB, Arduino IDE, Java, LaTeX
**Software Libraries**: Pandas, SciPy, NumPy, TensorFlow, Keras, scikit-learn
**Software Development**: Bash, Git/GitHub, VSCode, Conda/Mamba, Jupyter
**Simulation/Modeling**: LTSpice Simulator, Altium Designer, Blender 3D

## Research Experience

**Undergraduate Researcher** May 2023 – October 2023
*Advisor: Professor Wu-Jung Lee, Applied Physics Laboratory* *Seattle, WA*

**Main Project:** Conducted data-driven investigation of subsampling schemes to reduce data management costs while capturing representative data using a behavioral analysis of bat activity – done using **NumPy**, **SciPy**, and **Pandas**.

- **Presented preliminary work of this project at the 26th Annual Undergraduate Research Symposium**
- Supervised the training of 5 new members and wrote instructional material – uploaded to **GitHub** – to assist fieldwork for collecting acoustic data from the Union Bay Natural Area using Audiomoth recorders.
- Performed a detailed comparison of 2 automated bat call detectors: BatDetect2 and NABatML.
- Updated **Python** pipeline developed by colleagues to run BatDetect2 on collected data and generate activity plots.

**Undergraduate Research Assistant** May 2022 – October 2022
*Advisor: Professor Wu-Jung Lee, Applied Physics Laboratory* *Seattle, WA*

**Main Project:** Led team efforts in a 7-month recording season using **Audiomoth** recorders to collect 24-hr ultrasonic acoustic data (roughly 16TB) from 6 locations across the Union Bay Natural Area – details uploaded to **GitHub**.

- Used Cornell Lab of Ornithology's **RavenPro** software to detect bat echolocation calls from acoustic data.
- Developed **Python** modules to visualize bat call activity in multiple formats using **Pandas** – uploaded to **GitHub**

**Undergraduate Research Intern** September 2021 – April 2022
*Advisor: Professor Wu-Jung Lee, Applied Physics Laboratory* *Seattle, WA*

- Conducted a preliminary validation of machine learning model, Bat Detective, by generating precision-recall curves using primary data collected from the Union Bay Natural Area from September to October 2021.
  **Presented results from this work at the 25th Annual Undergraduate Research Symposium**

## Capstone Projects

These were senior capstone projects that needed to be ideated, proposed, and prototyped over a 10-week quarter.

**MyoGrind: Bruxism Management Device (Showcase Winner)** Spring 2024
*BIOEN 461: Neural Engineering Tech Studio by Professor Kim Ingraham* *University of Washington, Seattle, WA*

- Led the design process of a system that used MyoWare muscle sensors to record EMG from the masseter muscles and detect teeth grinding to notify users via bluetooth, LED indicators, and vibro-tactile stimulation.
- Our team won the final showcase which involved industry experts and medical professionals acting as judges to evaluate our product's value proposition, customer discovery process, and live prototype demo.

**WeatherPatrol: TinyML Rain Prediction using Arduino Nano 33 BLE** Spring 2024
*EE 400A: TinyML by Professor Radha Poovendran* *University of Washington, Seattle, WA*

- Developed and deployed a tinyML rain prediction device using the Arduino Nano 33 BLE Sense to read temperature, pressure, and relative humidity from the environment and predict if there would be rain in the next 30 minutes.
- Programmed Arduino Nano to broadcast predictions over Bluetooth Low-Energy (BLE) to nearby smartphones and equipped system with rechargeable batteries to make device fully deployable.

## Selected Conference Presentations

**Krishna A**, Lee W-J. (2024) Investigation of Duty Cycles for Measuring Activity in Passive Acoustic Bat Monitoring. The 186th Meeting of the Acoustical Society of America, Ottawa, Ontario, Canada, May 13-17, 2024.

## Research Symposiums

**26th Annual Undergraduate Research Symposium** May 19th 2023
*University of Washington* *Seattle, WA*

- Presented on preliminary research on duty cycle-based strategic subsampling for the passive acoustic monitoring of bats to reduce data management costs while collecting representative data.

**25th Annual Undergraduate Research Symposium** May 20th 2022
*University of Washington* *Seattle, WA*

- Presented preliminary results of using Bat Detective, a **CNN**-based bat call detector trained on bat calls from Romania and Bulgaria, and explored its success in detecting bat calls collected from Seattle.