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Kavi Dey

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Education

Harvey Mudd College — **Claremont, CA** — **Aug 2022 – May 2026**
- **B.S. in Computer Science, GPA: 3.7**

Seattle Academy High School — **Seattle, WA** — **Jan 2019 – June 2022**
- **High School Diploma, GPA: 4.13**, High Honor Roll

Experience

Music Information Retrieval Lab — **Harvey Mudd College** — **2023**
- Applied state of the art NLP techniques augmented with web scraping for zero shot composer classification
- Developed novel online alignment algorithms for 3 way audio alignment of piano concertos
- Lead data collection and created new audio tampering detection systems

Analog Circuit Engineering Lab — **Harvey Mudd College** — **2023**
- Lead low level embedded development on SAM-4 MCU (SPI & Ethernet). Tested ultrasonic beam forming sonar

Bee Lab — **Harvey Mudd College** — **2022**
- Built robust pollen detection system. Trained zero shot species classification (Siamese Net & ResNet transfer learning).
- Collaborated with professional biologists & developed public website to share the model
- Wrote article explaining the basics of siamese nets

Human Centered Robotics Lab — **University of Washington** — **2018; 2020 - 2022**
- Worked with Prof Maya Cakmak and Maria E. Cabrera to develop accessible robot tele-operation interfaces
- Performed data analysis of user studies [1]. (2021)
- Led interface design and studies of interface alternatives. Co-first authored [2].
- Lead research in programming by demonstration & mentored 5 undergraduates across 3 differnet projects (2022)

Makeability Lab — **University of Washington** — **2019**
- Worked with Ather Sharif and Prof Jon Froehlich on Project Sidewalk (makeabilitylab.cs.washington.edu/project/sidewalk).
- Integrated deep learning curb-ramp detection into temporal tracking of sidewalk quality to help those with mobility impairments. [3]

Intern — **Adobe** — **2018**
- Programmed ultra-lightweight ML speech detection classifier for Character Animator, added to developer credits

MATE & FRC Robotics — **Seattle Academy High School** — **2019-2022**
- FIRST FRC: ’20-’22 Team Lead, ’19 Code Lead | MATE: ’20-’22 Team Lead, ’18-’19 Code + Electrical Lead
- Cultivated diverse leaders and supportive culture, enhanced team documentation and communication strategies
- Spearheaded 30+ person team in remote and in person settings (FRC)
- Developed multi-node realtime communication system and UI, led team effort to build underwater robot (MATE)

Languages and Technologies

- **Expert:** Python, Typescript, Svelte, Pytorch, Pandas/Matplotlib
- **Intermediate:** THREE.js, C++, ROS, Unix, Compiler Design, Latex
- **Engineering:** Schematic Capture, Board Layout, Altium, I2C, Trapezoidal and Field-Oriented ESC Design, PIC Programming, MOSFETs, Solidworks
- **Advanced studies including:** Proof Based Real Analysis; Linear Algebra; Multivariable Calculus; Quantum Theory; Inverse Kinematics; Optimization; Machine Learning

Personal Projects

Electronic Speed Control (ESC) Design — **Project Lead** — **2020 - 2023**
- Directed team (3 high school students) design of brushless motor ESC
- Taught college level electrical engineering and brushless motor control theory, schematic design, PCB design, micro-controller programming

PPE-Exchange — **Lead Developer** — **Mar 2020 - June 2021**
- Orchestrated development of full stack website for Washington State Hospital Association to help hospitals (50+) exchange needed PPE during COVID-19
- Engineered custom PPE-Distribution algorithm with input from MultiCare

Additional Experience and Awards

2022 **Harvey S. Mudd Merit Award**
2021 **World Championship Top 10** MATE Telepresence Competition

2020 **Rookie All Star Award**, FRC: Redshift 8032

2020 **FRC Dean's List Semi-Finalist**

2018 **Regional Competition Top 5** MATE Pacific Northwest Region

[1] Maria E. Cabrera et al. "An Exploration of Accessible Remote Tele-operation for Assistive Mobile Manipulators in the Home". In: *30th IEEE RO-MAN*. IEEE, '21, pp. 1202–1209. DOI: 10.1109/RO-MAN50785.2021.9515511. URL: https://doi.org/10.1109/RO-MAN50785.2021.9515511.

[2] Maria E. Cabrera* et al. "Cursor-based Robot Tele-manipulation through 2D-to-SE2 Interfaces". In: *IEEE/RSJ IROS*. IEEE, '21, pp. 4230–4237. DOI: 10.1109/IROS51168.2021.9636008. URL: https://doi.org/10.1109/IROS51168.2021.9636008.

[3] Ather Sharif et al. "Experimental Crowd+AI Approaches to Track Accessibility Features in Sidewalk Intersections Over Time". In: *ASSETS*. Ed. by Jonathan Lazar, Jinjuan Heidi Feng, and Faustina Hwang. ACM, '21, 65:1–65:5. DOI: 10.1145/3441852.3476549. URL: https://doi.org/10.1145/3441852.3476549.