

Madeline Watts

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EDUCATION

- **Colorado State University** Fort Collins, Colorado
B.S. in Computer Science, B.A. in Economics, Minor in Statistics August 2018 - May 2022

EXPERIENCE

- **Machine Learning and Computer Vision Laboratory** Fort Collins, CO
Research Assistant November 2021 - August 2022
 - **Geometry of Learning:** Developing state-of-the-art adversarial attack defences using manifold learning, dimension estimation, and other mathematical tools
 - **Microgesture Dataset:** Creating the first public microgesture dataset, consisting of both synthetic and real data and use it to train gesture recognition models
- **Natural User Interaction Laboratory** Fort Collins, CO
Undergraduate Research Assistant September 2020 - April 2022
 - **Gestural Interaction Techniques:** Research comparing microgestures and mid-air interaction techniques in augmented reality
 - **Biomass in Virtual Environment:** Analyzed data, produced statistical results, and contributed to paper examining the effects of biomass in virtual environments
 - **Immersive Analytics and Data Visualization:** Collaborated on a research project to better understand human interaction with immersive analytics in an augmented and virtual reality environment
- **Computer Science Department** Fort Collins, CO
Undergraduate Teaching Assistant January 2020 - May 2022
 - **Java Teaching Assistant (CS 163/4):** Lead programming recitations, teach supplemental lectures, present live coding demos, and work with instructors to revamp the course
 - **Lead Teaching Assistant (CS 192):** Designed curriculum and created assignments, graded assignments, and oversaw operations with students and the other teaching assistants
- **Computer Science Department** Fort Collins, CO
Ambassador of Computer Science October 2019 - August 2021
 - **Cultivated an inclusive and diverse environment:** Organized events for prospective and current students, collaborated with faculty, student volunteers, and department visitors, invited to speak about the importance of diversity in STEM fields at 20+ university events, and successfully hosted 16 Virtual Grace Hopper Viewing Parties (Oct '20)

PROJECTS

- **Bayesian Neural Network:** Create a Bayesian neural network to predict California Housing Prices (May '22)
- **Microgestures in 3D:** Developed a 3D interface to explore microgestures as an interaction technique in augmented reality, awarded best CS 564 project (Dec '21)
- **Ethical AI Elicitation:** Collaborated with a team to compare human and intelligent systems responses to questions with high ethical implications (May '21)
- **"Hitchhiker" Ride Sharing Application:** Worked with a team to create a ride-share application for college students, implemented a Rest API, dockerfiles, and Kubernetes pod, and utilized Java, JavaScript, and Bash (Dec '20)
- **Intelligent Music Player:** Collaborated with a team of 4, utilized Python, Spotify's Developer API, Amazon Rekognition API, and Raspberry Pi to develop an application selects and plays songs corresponding to the user's emotion (May '20)
- **Coding Chat (Intelligent Immersive Classroom):** Utilized Unity, Blender, C#, and GitHub to create an interactive computer science classroom staffed with AI teaching agents in virtual reality (March '20)
- **Immersive Environments for the Aging Brain:** Collaborated with a team to develop a music-based virtual reality environment to restore cognitive function and long term memory in dementia and Alzheimer patients (Oct '19)

SKILLS SUMMARY

- **Languages:** Python, JavaScript, Java, SQL, C, C#, C++, Bash, HTML/CSS, R, Swift, PHP
- **Frameworks:** React, React Native, Node.js, MongoDB, MySQL, Express, Unity, MaterialUI, Bootstrap
- **Tools:** AWS, Firebase, Jupyter Notebooks, npm, Homebrew, Git/Github, Docker, Wordpress
- **Libraries:** NumPy, PyTorch, Tensorflow, Keras, Pandas, Matplotlib, Leaflet, Sklearn, BLiTZ
- **Other Skills:** Bayesian Statistics, Machine Learning, Computer Vision, Data Analysis, Regression Analysis, UI/UX Design

HONORS AND AWARDS

- Academic Excellence Fellowship (April '22)
- Best NUI Lab Researcher (Nov '21)
- Grace Hopper Scholarship (Oct '19, '20, and '21)
- Awarded NSF Reset Scholarship (Feb '21)
- Industry Track Award at HackCU (Feb '20)
- Technical Award at RamReality (Oct '19)

EXTRACURRICULAR EXPERIENCE

- **President of ACM-W** Fort Collins, CO
Reinvented organization for online format, tripled membership, expanded mentoring program May 2020 - May 2021
- **Girls Who Code Curriculum Chair** Fort Collins, CO
Developed the current curriculum, taught Python workshops, mentored middle school students Aug 2019 - Aug 2021