Aaleyah Lewis

Accessibility, Human-Computer Interaction
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EDUCATION

Doctor of Philosophy, Computer Science and Engineering — Expected Graduation Date: June 2026
University of Washington
Coursework: Artificial Intelligence, Machine Learning, Human-Computer Interaction, Data Visualization
Recognition: GEM Fellow, ARCS Foundation Scholar

Bachelor of Science, Computer Science; Minor: Psychology — Graduated: May 2021
University of Maryland, Baltimore County (UMBC)
Graduated with Honors
Recognition: Merit Scholar, McNair Scholar, LSAMP Scholar, CWIT Affiliate

SKILLS

Programming: Python, C++, C, JavaScript, React, HTML/ CSS, SQL, R, RobotC
Software: Terminal, Jupyter Notebook, Autodesk Inventor, Microsoft Office **(**Word, PowerPoint, Excel)
Research: Qualitative, Quantitative, Mixed-Methods Approach, Participatory Design, Co-design, Ethnographic Observation
Interest: Accessibility, HCI, Natural Language Processing, Responsible AI/ML
Operating Systems: Mac OS

RESEARCH PROJECTS

Towards Intersectional Speech Recognition for African American English Speakers with Dysfluencies
Lead Researcher | CSE | University of Washington — 2023 - Ongoing

- What tasks do African American English speakers with speech disabilities seek when using speech recognition systems?
- What are the experiences, perceptions and challenges of African American English Speakers who have speech disabilities when using speech recognition systems?
- How do sociocultural factors influence the adoption and utilization of speech recognition systems among African American English speakers who have speech disabilities?

Deceptive and Inaccessible: Examining Experiences of Deceptive Design with People Who Use Visual Accessibility Technology
Lead Researcher | CSE | University of Washington | Submitted to CHI24 — Spring 2023

- What deceptive design patterns do people who use visual accessibility technologies encounter in online services?
- How do people who use visual accessibility technologies navigate deceptive design patterns and associated access barriers in online services?
- How do deceptive design patterns impact online experiences of people who use visual accessibility technologies?

RESEARCH EXPERIENCES

Oak Ridge National Laboratory, *GEM Fellow* — June 2021 – August 2021
Skills/Tools: JavaScript/React, Elasticsearch

- Developed web application using JavaScript/React to assist cyber analysts in detecting anomalous behaviors on machines
- Implemented interactive data visualizations (i.e., treemap, collapsible tree) with filtering systems using JavaScript

Stanford University, *Summer Undergraduate Research Fellow* June 2020 – August 2020
Stanford Ocean Acidification Experience
Skills/Tools: Python (Pandas, NumPy)

- Created python program to calculate and collectively summarize tracking data (i.e. head translation, hand translation) of participants during VR experience
- Generated python script to organize summarized tracking data in order to enable easy access

University of Maryland, Baltimore County, *Research Assistant* Sept 2019 – Dec 2019
Sleep Analytics by Analyzing Leg Movements During Sleep
Skills/Tools: Python (Pandas, NumPy), Jupyter Notebook

- Used Python to collect and analyze physiological data (i.e. Blood Volume Pulse, Heart Rate, Accelerometer)
- Used Python to generate graphs that plotted distribution of physiological data
- Implemented algorithm that calculated root mean square (RMS) of physiological data

Cornell University, *LSAMP Research Scholar* June 2019 – August 2019
Leveraging Big Data to Mediate Online Conflicts
Skills/Tools: Python (Pandas, NumPy), Jupyter Notebook

- Developed a chrome extension to mediate conflicts on Reddit using JavaScript and Python
- Detected nuances in language indicative of conflict on Reddit using Natural Language Processing
- Generated and analyzed toxicity scores for comments on Reddit to identify monotonic trends of toxicity within conversations

PUBLICATIONS & WORKSHOPS

2023	Working at the Intersection of Race, Disability, and Accessibility Christina N. Harrington, Aashaka Desai, **Aaleyah Lewis**, Sanika Moharana, Anne Spencer Ross, Jennifer Mankoff. *ASSETS 2023: SIGACCESS Conference on Computers and Accessibility, 2023.*
2023	Towards Intersectional CUI Design Approaches for African American English Speakers with Dysfluencies **Aaleyah Lewis**, Orevaoghene Ahia, Jay L. Cunningham, James Fogarty *CUI* @CHI: Inclusive Design of CUIs Across Modalities and Mobilities. CHI 2023: International Conference on Human Factors in Computing Systems, 2023.
2022	Using Fiber Arts and Sonification to Improve Data Accessibility of Maker Spaces *Aashaka Desai, Venkatesh Potluri***, Aaleyah Lewis**, *Jayne Everson, Jennifer Mankoff, Richard E. Ladner. Reimagining Systems for Learning Hands-On Creative and Maker Skills.* CHI 2023: International Conference on Human Factors in Computing Systems, 2023
2021	Developing Interactive Tool to Assist Cyber Analysts in Detecting Anomalous Behavior on Machines **Aaleyah Lewis**. *ORNL Research Symposium*

2020	Virtual Reality in Environmental Education: Investigating the Efficacy of VR as an Educational Tool for Ocean Acidification **Aaleyah Lewis**. *Stanford University SURF Research Symposium*
2020	Conflict Mediation at Scale: Leveraging Big Data to Mediate Online Conflicts **Aaleyah Lewis**. *Undergraduate Research and Creative Achievement Day (URCAD)*

TEACHING

Teaching Assistant Fall 2023

University of Washington | CSE | CSE 440: Human-Computer Interaction

- Led instruction on "Designing with Accessibility in Mind" and "(Un)Intended Consequences".
- Assisted in instruction and supported faculty in conducting lectures and grading.
- Created curriculum and facilitated weekly sections for 35 undergraduate students.

Teaching Assistant Spring 2023

University of Washington | CSE | CSE 440: Human-Computer Interaction

- Assisted in instruction and supported faculty in conducting lectures and grading.
- Created curriculum and facilitated weekly sections for 30 undergraduate students.

INVITED TALKS AND PANELS

Speaker: **"Working at the Intersection of Race, Disability, and Accessibility"** - Paul G. Allen School Accessibility Colloquium 2023

Panelist: **"Inspiring and Supporting the Next Generation of Black Women in Computing + Tech"** - BlackcomputeHER Conference 2019

Panelist: **"Navigating Your Undergraduate Journey"** - LSAMP Summer Bridging Conference 2018

Panelist: **"Navigating Your Undergraduate Journey"** - LSAMP Summer Bridging Conference 2020

SCHOLARSHIPS & AWARDS

College of Engineering Dean's Fellowship	2021
GEM Fellowship	2021
ARCS Foundation Fellowship	2021
Lockheed Martin Scholarship	2021
UMBC Undergraduate Researcher of the Week	2020
Cisco Security Business Group Scholarship	2020
Stanford University Scholar Spotlight	2020
Summer Research Institute Fellow	2020
ACM Richard Tapia Scholarship	2020
Georgia Tech Focus Scholar	2019
Lockheed Martin Scholarship	2019
UMBC Undergraduate Research Award Recipient	2019
Grace Hopper Celebration Scholarship	2019
CWIT Affiliate Recognition Award	2018

CLASS PROJECTS

The Intersection Deck, *Computer Ethics* September 2021 – December 2021
The Intersection Deck is a card-based design tool for integrating intersectional perspectives into technology design. This system has two main components: a design methodology to generate intersectional, value-based design cards with non-designer participants whose intersectional identity facets are underrepresented in technology design, and a card-based design tool to be used by technologists within the design process.

GritView, *Software Engineering* September 2020 – December 2020
This API provides students with access to data relating to course details, professors, course grades and course evaluations from the University of Maryland, Baltimore County (UMBC). We used python and Flask for the web framework and developed the database using PostgreSQL. Agile Scrum methodology was used throughout this process with 2-week sprints. As a developer for this project, I designed the course endpoint, which had two query parameters (i.e., course name and semester), and returned the course details, professors who taught the course and the grades received in the course.

Wine Quality Assurance, *Artificial Intelligence* November 2019 – December 2019
The goal of this project was to predict wine types qualitatively (i.e., red, white) using binary classification. In addition, I predicted wine quality using regression with a quantitative value ranging from 1-10, inclusively. In order to complete this task, I used Random Forest, Logistic Regression, and Neural Networks for classification methods. For regression methods, I used SGD Regressor, Decision Tree, Linear Regression.

LEADERSHIP

A Vision for Electronic Literacy & Access (AVELA) 2021 - present

- This organization serves to bridge the opportunity gaps presented in STEM education for underrepresented minorities. I assisted in the development of curriculum that will be distributed to Mathematics, Engineering, Science, Achievement (MESA) instructors to teach K-12 students computer science. I also helped to develop a 2.5 hour lesson plan and design activity for teaching 3D modeling to students in the Black Student Union at Kentridge High School.

Ronald E. McNair Postbaccalaureate Achievement Scholars Program 2018 – present

- This program is designed to prepare students for graduate studies across all disciplines. As a McNair Scholar, I am involved in a community of diverse scholars who are pursuing a Ph.D. I served as the McNair Ambassador for Recruitment and Special Event where I designed and implemented recruitment efforts to increase student interests and enrollment into the program. In addition, I served as a conference ambassador where I helped plan and host our annual research conference.

Louis Stokes Alliances for Minority Participation (LSAMP) Program 2017 - present

- This program aims to substantially increase the amount of minority students attaining graduate degrees in STEM fields. As a LSAMP Scholar, I have conducted research at my home institution through their fall and spring semester research fellowship programs. I have also participated as a panelist for the 2018 and 2020 LSAMP Summer Bridging Conference which provides incoming freshmen with insight on how to successfully navigate their upcoming academic journeys.

National Society of Black Engineers (NSBE) 2017 – present

- This collegiate organization's goal is to increase the number of culturally responsible Black Engineers who excel academically, succeed professionally and positively impact the community.

As an active member of NSBE who desires to give back to my community, I became a mentor to help lowerclassmen navigate their undergraduate careers and prepare for their journeys beyond.

Center for Women in Technology (CWIT) Scholars Program 2017 - 2021

- This program aims to enable success for women and other minorities in STEM fields. As an active affiliate, I was on the CWIT Bites and Bytes committee where I helped to plan an overnight program for high school girls who are interested in pursuing STEM related careers.