HANNAH JOHNSON

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RESEARCH INTERESTS:

- Interactive Technology
- Dance and Embodiment
- Soma Design
- Ethnography and Intersectionality
- Sustainability and Ecological Issues
- Feminist HCI and Design Justice
- Critical Disability Study and Disability Justice
- Design Fiction and Participatory Design
- Biomechanics and Interactive Rehabilitation
- Extended Reality and Motion Tracking
- Ethics and Human Centered Technology
- Interactive Art

EDUCATION:

Ohio State University Columbus, Ohio May 2023
Bachelor of Science, Computer Science Engineering, AI specialization
Bachelor of Science, Honors Theoretical Mathematics
Suma cum laude; GPA: 3.9 out of 4.0
Walnut Hills High School Cincinnati, Ohio June 2023
High School Diploma, June 2019.

RESEARCH EXPERIENCE:

Fields Institute Research Program (July 2022 – August 2022)
University of Toronto, Toronto, Canada
Investigated mathematics behind computer vision analysis of Spaceflight-Associated Neuro-Ocular Syndrome (SANS).

- Implemented an open-source Python package for Hyperspectral Image processing with 600 customizable lines of code to meet the parameters of biomedical research scientists.
- Created a foundation for subsequent Python implementations by exploring 3 unmixing and 7 segmentation geospatial Hyperspectral Imaging MATLAB algorithms, encompassing various geometrical techniques.
- Streamlined the identification of the most suitable algorithm for biomedical researchers' input data by creating a script to quantify the accuracy of the segmentation algorithms, pulling 5 measures from current publications.

Knots and Graphs Research Program (July 2020 – August 2020)
The Ohio State University, Columbus, Ohio
Contributed to advancements in graph theory, working with a research team to generalize Stanley's Acyclic Orientations Theorem for directed and unsigned graphs.

- Synthesized ideas from Stanley's acyclicity theorem for signed graphs using the B-symmetric chromatic polynomial and 3 related theorems to find a viable generalization approach.
- Collaborated with Dr. Stanley to gain deeper insights, utilizing his original inspiration to guide the research.
- Developed a mapping that proved instrumental for the subsequent year's group in achieving the complete generalization. Presented the research findings at the Young Mathematicians Conference.

Ohio State University, *Research Assistant* *(*May 2021 - August 2021)
Columbus, Ohio
Expanded functionality of a software used to conduct psychology research about collaboration and group behavior.

- Added functionality to Breadboard social experiment script in Groovy language.
- Found and fixed bugs as well as improved readability of code.

TEACHING EXPERIENCE:

Ohio State University, *Student Instructional Associate* *(*August 2021 – December 2021)
Columbus, Ohio
Empowered students to conquer the lecture content as a recitation instructor for Math 1075, Precollege Mathematics II, while actively supporting the lecturer's objectives.

- Instructed biweekly recitations, actively engaging students in solving example problems leading to a notable improvement in their understanding of the lecture content.

- Facilitated effective learning and growth by grading for two classes, each consisting of over 30 students, ensuring fair assessment, and providing constructive feedback.
- Mentored students during dedicated office hours, cultivating a positive learning environment by tailoring my explanations to their unique learning style.

Mathnasium of Hyde Park, *Tutor* *(*June 2018 - August 2019)
Cincinnati, Ohio
Tutored K-12 students in foundational and high school level math. Tutored K-12 students in foundational and high school level math

- Translated math concepts to a format that the student could naturally understand.
- Socialized with students and played games to create a positive association with math.
- Coordinated student seating to maximize focus.
- Organized worksheets and test results into binders to create a structured learning environment.

EMBODIED EXPERIENCE:

Flux and Flow *(*July 2023)
Columbus, Ohio
Participated in a variety of unique classes at a small multi-generational dance studio. Practiced improvisation and internal connection during Contemporary Flow. Contributed to a safe environment to explore joy by dancing with a multi-generational group of individuals during Club Flow and Dance Party.

Ohio State University Dance Department *(*August 2020, August 2023 – May 2023)
Columbus, Ohio
Took three semester long classes with the Department of Dance at OSU. Focused on sustainable movement and emotive dancing in the Ballet class. Practiced dancing from the inside and improvisation in the Contemporary class. Described and analyzed movement in a writing about dance class.

OSU Swing Dance Club *(*August 2022 - August 2023)
Columbus, Ohio
Danced East Coast Swing, specifically Lindy Hop and solo jazz. Practiced intuiting partner movement and invitational leading. Participated in several social dances, mostly in Columbus but also in Toronto, Chicago, and Cincinnati.

Momentum Contemporary Ballet (August 2020 - January 2022)
Columbus, Ohio
Worked on healing relationship with dance at weekly open ballet classes. Focused on enjoying movement and not pushing body. Choreographed and taught a piece for the autumn semester performance.

Dimension Fitness *(*Jan 2018 - August 2019)
Cincinnati, Ohio
Applied movement knowledge from dance to a different physical space when learning Aerial Hoop. Strengthen necessary muscles and learned new embodied vocabulary during weekly classes.

De La Dance Center *(*2005 - 2017)
Cincinnati, Ohio
Studied ballet at a small family-owned ballet studio. Also learned other dance forms including Tap, Modern, Character, and Pilates. Performed in multiple performances including the Nutcracker, Cinderella, and Coppelia. Participated in several summer intensives where I danced 5-7 hours each day.

VOLUNTEER AND LEADERSHIP EXPERIENCE:

Holden Village, *Kitchen Assistant* *(*October 2023 – December 2023)
Chelan, Washington
Lived and volunteered in a small community in the mountains of Washington as a kitchen assistant.

- Prepared 3 meals a day for over 70 people, ensuring balanced and allergen contamination free sustenance.

- Upheld food safety procedures, organization, and time management to create a clean kitchen environment.
- Predicted needs of head cook and delegated tasks with fellow kitchen assistants to ensure efficient workflow.
- Worked as a barista for the local coffee shop, Beanies, taking orders with espresso and frothed milk.

Diversity and Departmental Climate Committee, *(*August 2020 – May 2023)
Columbus, Ohio
Served as the undergraduate representative for the Math Department DDCC at Ohio State University.
- Advocated for more virtual supports and offerings during the Covid-19 Pandemic to make classes more accessible and inclusive.
- Conceptualized the structure and function for the Cycle Program to help support underrepresented students in their first year of mathematics and create access to research opportunities.
- Proposed to drop the GRE requirement for graduate admissions to lower opportunity barrier for students with intersectional backgrounds and increase diversity in the graduate program.

Association of Women in Math, Social Media Chair *(*August 2020 – May 2023)
Columbus, Ohio
Ran the social media for the OSU chapter of Association of Women in Math.
- Designed unique colorful posters to advertise events, like monthly teatime, with the target of creating a safe and supportive community.
- Scheduled Instagram posts and stories to inform about the club happenings and encourage engagement.
- Planned special events like Integral Bowl and Pi Day to connect with the wider community.

Buckeye Aha! Math Moments (BAMM) *(*August 2020 – Jan 2022)
Columbus, Ohio
Volunteered with the OSU Math Department outreach group to promote diversity and enjoyment of mathematics by working with middle school and high school students.
- Empowered students to create and use algorithms by teaching an introductory Python course during the summer camp.
- Offered advice to younger generations and verbalize a shared experience by speaking on a panel about my experience as woman in math.

CONFERENCES AND WORKSHOPS:

Soliya Global Circles (September 2023)
- Engaged in dialogue about the impact, ethics, and responsibility surrounding issues arising from digital transformation.
- Listened to stories about technology impact on a local scale from people located all over the world including Tunisia, the U.S., and Yemen.
- Shared personal experiences and perspective on the transformational aspect of emerging technology.

Connecting the Body to the Natural World (April 2023)
Ohio State University, Columbus, Ohio
- Participated in a dance activism workshop lead by Brother(hood) Dance! and Global Water Dances Columbus.
- Engaged actively with discussion and knowledge sharing surrounding the global water crisis and inaccessibility of clean water.
- Embodied cultural knowledge and appreciation for water by learning traditional African dance steps.

Young Mathematicians Conference (August 2020)
Ohio State University, Columbus, Ohio
- Presented the results of the Knots and Graphs Research Program.
- Learned a wide breadth of current mathematical research.
- Introduced to a variety of new hot topics in math research.

PROJECTS:

Fridge Fairy (January 2023- April 2023)
Created a web app with a team to suggest recipes base on inputted ingredients. The web app communicates with ElasticSearch through a Rest API. The user can control how many ingredients must match, save recipes, and add substitutions.

Analyzing Runner Form with Computer Vision (November 2022- December 2022)
A runner's form can be analyzed by looking at their cadence, change in their vertical direction, and whether they are overstriding. The group filmed a person running and used computer vision techniques to analyze the footage. Specifically, the group used background subtraction to determine the runner's form during each stride and MEI/MHI to analyze their overall form.

Legend Of Zelda Video Game (January 2021- April 2021)
Recreated the level one dungeon from the NES Legend of Zelda video game. The Team used Visual Studios and Monogame to build the game from scratch, including rooms, enemies, and controls. At the end, the team embellished with a few rooms and enemies of our own design.

WORK EXPERIENCE:

JP Morgan Chase, *Data Analysis Intern* (June 2021 - August 2021)
Columbus, Ohio
Increased efficiency of the Consumer and Community Banking (CCB) operations by successfully executing 5 data analytic projects.

- Ensured a smooth transition to a new system and facilitated onboarding of employees by interviewing 7 colleagues and documenting the user interface (UI) of the Microsoft Access project tracking database.
- Developed 3 interactive Tableau visualizations of home lending data, effectively illustrating the impacts of COVID-19 and delivering an overview of trends to the team.
- Slashed the time of weekly consistency checks by 70% by engineering an Alteryx automation that enables seamless and efficient database comparisons.

SKILLS:

- Python, Java, C#, Html, C
- Unity, WebGL
- GitHub
- AutoCAD, MATLAB, Excel
- Tableau, Alteryx, SQL
- Object Oriented Programming Skills
- Problem Solving
- Communicating Abstract Concepts
- Dance
- Graphic Design
- Running social media
- Hair cutting and styling

HONORS AND CERTIFICATES:

- Dean's List
- Land Grant Scholarship
- Cincinnati Alumni Scholarship
- Emery Memorial Scholarship (CSF)

LANGUAGES: English, Italian