
RESEARCH PORTFOLIO

Emani Dotch

2nd Year PhD Student
UC Irvine, Department of Informatics
Emani.dotch@gmail.com

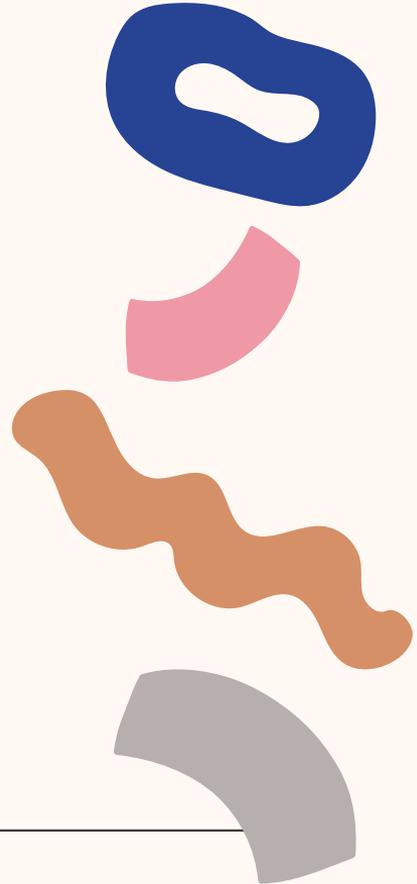


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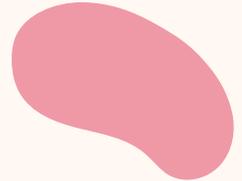
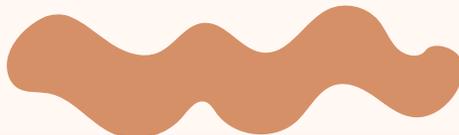
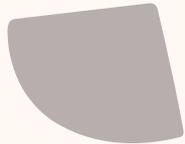
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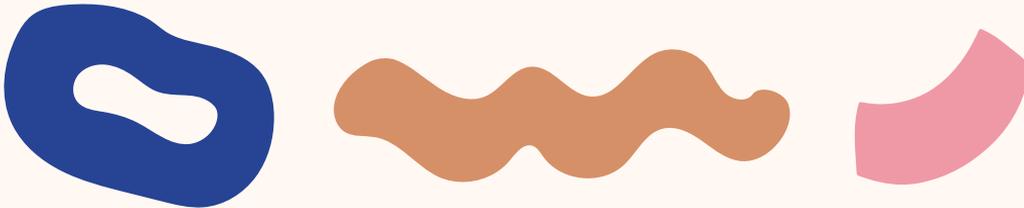
ABOUT ME

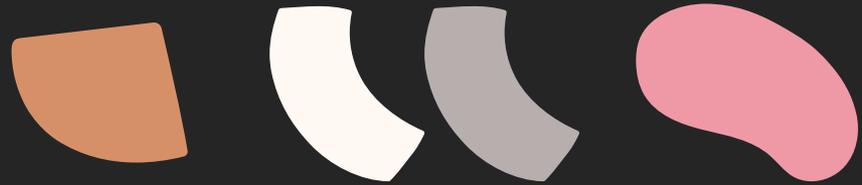
ABOUT ME!

I am a 2nd-year PhD student in the Department of Informatics at UC Irvine, interested in understanding how technology can be used to support autistic individuals.

Interest: Human-Computer Interaction (HCI), Accessibility, and Assistive Technology

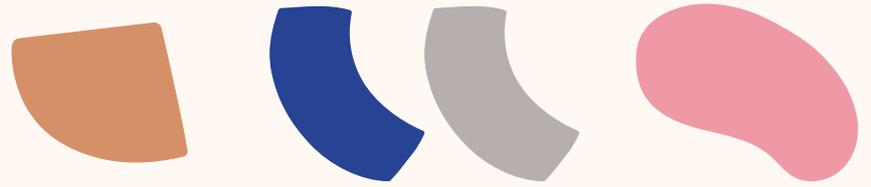
Research Approaches: Action Research (AR), Participatory Design, and Community-based/Community-Partnered Participatory Research





02

ACADEMIC PROJECTS



01

FOR THE CULTURE

Identifying social and cultural resources to support the overall comfort and inclusion of African-American and Black (AA/B) students during their time of matriculation at UCI.

PROJECT OVERVIEW

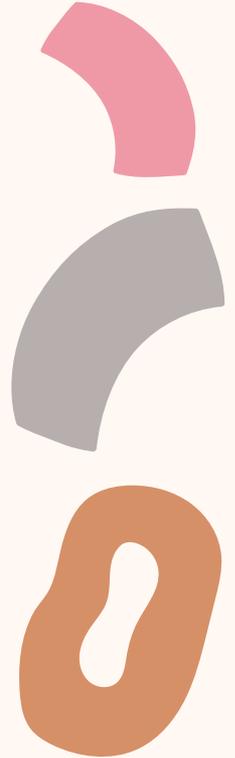
We conducted a series of focus groups and interviews with African American/Black (AA/B) undergraduate and graduate students at UCI to **understand their needs relating to accessing socially and culturally responsive resources** within Irvine and the greater Orange County area. **Six students** participated in the design and evaluation process over **10 weeks and interviewed twice to evaluate a website prototype.**

Goal: understand African American/Black student needs and identify potential resources

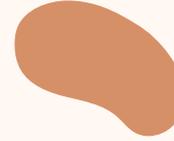
Timeline: 10 weeks

My Role:

- Conducted focus groups, interviews, and qualitative analysis.
- Collaborate with a team of four colleagues to conduct qualitative analysis
- Prototype sketching and designing using Figma



RESEARCH SET UP



FORMATIVE

Understand the needs of the Black/African American students at UCI.



LOW/MID FID

Design and evaluate low/mid-fidelity prototype to meet the needs of users discovered during the formative component.



HIGH-FID EVAL

Design and evaluate a high fidelity prototype based on feedback from previous sessions to meet user needs.

FORMATIVE COMPONENT



METHODS: Participants (n=5) were recruited by reaching out to our personal networks of **Black/African American students on campus.**

We conducted a **90 minute focus group** to understand 1) how students define Black culture, 2) where and how they accessed Black cultural spaces as UCI students, and 3) how access to these spaces impacted their feeling of belonging on UCI campus.

FINDINGS: From our focus group, we learned that Black students have a strong feelings about their identities and prioritize safety, community, mentorship, and access to information which resulted in 3 main takeaways to influence the design of technological support system: **centralized resources, buying Black, and safety.**



LOW FIDELITY PROTOTYPE



METHODS: Four **paper prototype** designs were presented for evaluation. Evaluations occurred during an **in-class peer review session** and during a **one-on-one interview** with one of our participants during the formative component focus group.

FINDINGS: Based on feedback from our paper prototype evaluation, the following changes were **implemented in our low/mid fidelity design**: 1) New categories that better reflected highlighted user needs such as Parents' Corner and Health and Wellness. 2) Renaming of unclear categories i.e. Black Resources becomes Black Organizations. 3) The ability to recommend resources to be included in the website.

HIGH FIDELITY PROTOTYPE



METHODS: A **focus group and usability testing session** was conducted with 5 participants via zoom. Each participant tested the website individually. After the usability tests, all of the participants joined for a discussion where they were asked to give **feedback about their overall experience with the user interface**.

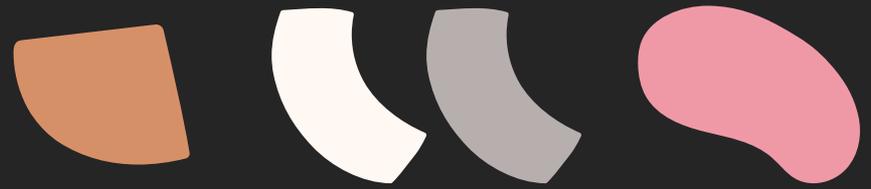
FINDINGS: From the feedback received, we grouped them into three topics: **navigation issues, website purpose and uses, and improvements**. Users found that there was a **need for the product to address basic needs** (housing, food, etc) but was not sure to fit these services in the categories that already exist so suggested a search bar. **Security and safety** were, once again, top of mind during user interviews, but, it is inconclusive if requiring logins would promote safety or act as a barrier for users to quickly access information they would like to see.



OUTCOMES & CHALLENGES

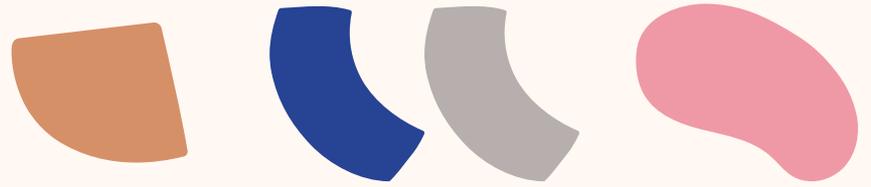
- **OUTCOME:** Develop a high-fidelity prototype of a website that serves as a centralized location of AA/B resources found on campus and in Irvine and the larger Orange-County Area.
- **OUTCOME:** Designers were validated in the trajectory of the project with an aim to continue the work beyond the scope of the class
- **CHALLENGE:** Time and recruitment
- **CHALLENGE:** Identifying AA/ resources that did not require a long commute
- **CHALLENGE:** Some of the needs discovered through focus groups and interviews were not solvable with technology





03

RESEARCH PROJECTS



01

AUDIOBUDDY (Part 1)

Digital health intervention using a smartwatch and smartphone to support autistic individuals with noise sensitivity and emotion regulation.

PROJECT OVERVIEW

We used empirical data from a **preliminary coding analysis** of two online autism forums to inform **early design ideas** for AudioBuddy, a **wearable assistive device** for autistic people to **support noise sensitivity and emotion regulation**. We then conducted two rounds of **usability testing** to understand design challenges to inform design iterations.

Goal:

- Support emotion regulation and auditory sensitivity with an emphasis on self-advocacy
- Understand design specifications and challenges for AudioBuddy system

Timeline: Three months to design and develop app and conduct end-user usability testing.

Outcome: Better understanding of autistic experiences of noise sensitivity; usability testing revealed challenges and implications for future design iterations.

My Role:

- Lead team of researchers in the design and developments of AudioBuddy system
- Conduct qualitative data analysis
- Design and develop high-fidelity prototype of assistive app
- Conduct in-lab usability testing
- Design semi-structured interview protocol
- Evaluate prototype with end-user

RESEARCH SET UP



Preliminary Data Analysis

- Analyze data from two **online autism forums** to understanding **coping methods, regulation strategies, and experiences of noise sensitivity.**

System Design

- Smartwatch only, smartphone only, or multi-device experience.
- Includes **self-regulation and emotion control principles from the Zones of Regulation** (ZOR) [1].
- **Measures environmental noise and provides a notification** when noise levels are above a customized threshold.

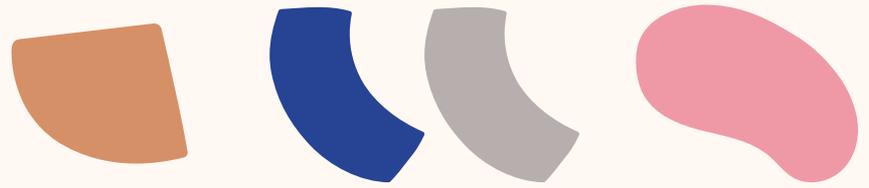
System Evaluation

- Functionality and power efficiency testing to understand sampling rate for battery efficiency
- Usability in-lab testing to understand design challenges
- Preliminary end-user testing with autistic children and caregivers

KEY INSIGHTS & FUTURE WORK

- **OUTCOME:** Better understand experiences and coping process; design implications for AudioBuddy tool.
- **OUTCOME:** Usability and end-user testing revealed challenges and implications for further design iterations.
- **CHALLENGES:** Recruitment of participants for preliminary end-user usability testing.
- **FUTURE WORK:** Collect additional empirical evidence and design feedback
- **FUTURE WORK:** Conduct co-design sessions with end-users
- **FUTURE WORK:** Deployment study to understand AudioBuddy's impact and potential for efficacy.





02

COPING THEIR WAY

Understanding the experiences of autistic individuals who are noise sensitive by applying a social support framework in the analysis of discussions in two online autism forums.

PROJECT OVERVIEW

We conducted a **qualitative study** of two online forums for autistic users and examined the role of **social support** and how autistic individuals make sense of and support each other regarding noise sensitivity.

Main Goals

- Understand how social support is used by autistic individuals to make sense of and support one another regarding their experiences of noise sensitivity.
- Understand experiences and related challenges of noise sensitivity as described by autistic individuals.
- Understand how being open about being autistic impact experiences of autistic people in virtual and physical spaces.

Outcomes: Identify barriers to accessible work, learning, and living environments due to noise sensitivity.

My Role:

- Collaborate with team to conduct qualitative analysis of data using inductive and deductive coding.
- Analyze data from two online autism forums to understanding coping methods, regulation strategies, and experiences of noise sensitivity.
- Train three undergraduate research assistants to conduct qualitative analyses

RESEARCH SET UP



DATA COLLECTION

Two forums were included for analysis based on an inclusion and exclusion criteria.

Posts and comments were retrieved for analysis based on an inclusion and exclusion criteria. A set of 36 posts and 133 comments was collected for preliminary analysis. A final set of 137 posts and 3,003 comments were retrieved for a second iteration of analysis.

DATA ANALYSIS

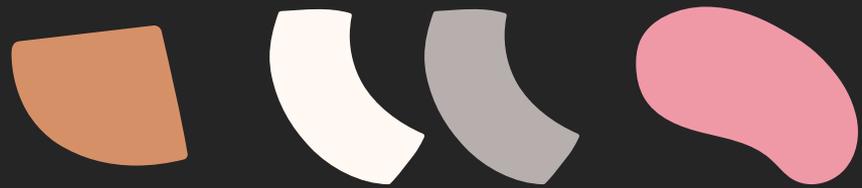
A combination of inductive and deductive coding was used to analyze the data.

The preliminary analysis of 36 posts and 133 comments yielded 8 high-level codes resulting in three thematic categories.

In the second and final iteration of analysis the entire data set was analyzed applying a social support framework and resulted in three areas support was sought and provided.

KEY INSIGHTS AND OUTCOMES

- **OUTCOME:** Identified barriers to accessible work, learning, and living environments.
- **OUTCOME:** Better understanding of coping methods and preferences of autistic individuals
- **OUTCOME:** Design implications for online communities and assistive technologies.
- **OUTCOME:** Wrote paper, pending acceptance
- **CHALLENGE:** Application of social support framework within autism culture



04

MENTORING

Undergrad Mentoring & Supervision

Jamarian Bell, (AAMU)

Philemon Jones, (AAMU)

Chantelle Williams, (AAMU)

William Blake, (AAMU)

Cameron Bolds, (AAMU)

Jarvis Prewitt, (AAMU)

Miahri Merrell, (AAMU)

Nathabi Mashego, (AAMU – SSS)

Lauryn Bell, (AAMU – SSS)

Darci Lewis, (USA)

Hanna Mofid, (UCI)

Avery Mavrovounioti, (UCI – ART)

Jailuo Hu, (UCI – ART)

Kade Joshua Na, (UCI – ART)

Nathan Serrano, (UCI – ART)

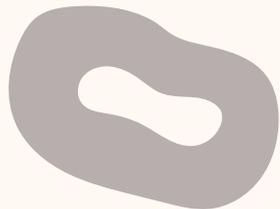
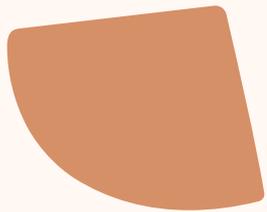
Rafael Carrillo Munoz, (UCI – ART)

Weijie Du, (UCI – ART)

Van Pham, (UCI - UROP)

Athena Rapinan, (UCI - UROP)

Emily Gao Wang, (UCI - UROP)



THANKS!

Let's Connect

Contact: dotche@uci.edu | emanidotch.com

Twitter: [@Emanilreon](https://twitter.com/Emanilreon)