

## **Creating Pathways to STEM: Ujima (Collective Work and Responsibility) Girls in a Robotics Leadership Project**

Research shows that Black girls and women, regardless of their academic achievements and science, technology, engineering, and mathematics (STEM) interests, often encounter academic under-preparation, social isolation, exclusion, and race-gender discrimination that negatively impacts their ongoing engagement and retention in STEM. To counter these negative trends, the Ujima Girls in Robotics Leadership Project is a free, hands-on engineering and robotics program that will teach middle and high school girls engineering and leadership in a culturally-relevant environment. Aligned with Umoja's "Mentoring" and "Community-Building/Communal Intelligence" practices, Ujima emphasizes peer-mentoring by providing opportunities for Black female high school and college students to serve as counselors and mentors. Additionally, scientists and executives will serve as mentors and share their experiences to broaden participants' STEM career aspirations. During this presentation, we will share the Ujima vision and exciting leadership opportunities for Umoja college students.

### **Presenters:**

Dr. Faheemah N. Mustafaa, Assistant Professor of Education University of California, Davis

Dr. Teresa W. Aldredge, Umoja Diop Scholars Counselor/Co-Coordinator- Cosumnes River College; Umoja Board Member, UC Davis C-STEM Board Member/Senior Advisor – Ujima Girls Robotics Leadership Project

# Creating Pathways to STEM: Ujima (Collective Work and Responsibility) GIRL Project

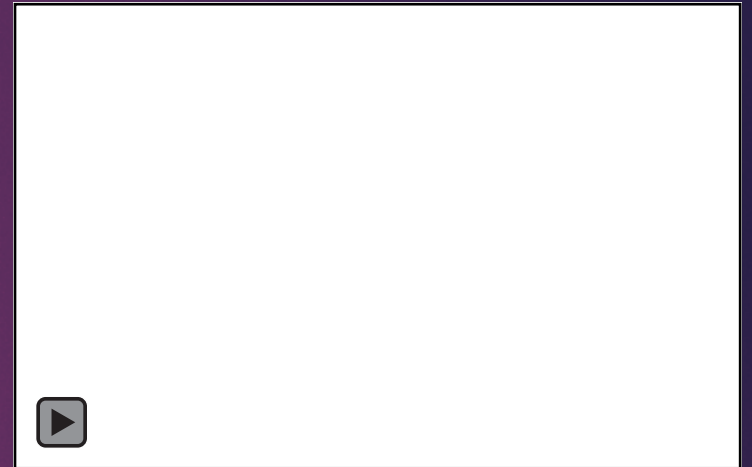
## PRESENTERS:

### **DR. FAHEEMAH N. MUSTAFAA**

ASSISTANT PROFESSOR OF EDUCATION  
UNIVERSITY OF CALIFORNIA, DAVIS  
CO-PRINCIPAL INVESTIGATOR – UJIMA GIRL

### **DR. TERESA W. ALDREDGE**

UMOJA CO-COORDINATOR/COUNSELOR, COSUMNES RIVER COLLEGE  
SENIOR ADVISOR – UJIMA GIRL



# Agenda

- ▶ Ujima GIRL Project Overview
- ▶ **Why** Ujima GIRL
- ▶ Career Opportunities
- ▶ Pathways to Getting There
- ▶ Brief Robotics Demonstration
- ▶ Community-Building Activities
- ▶ Q & A

# Introductions

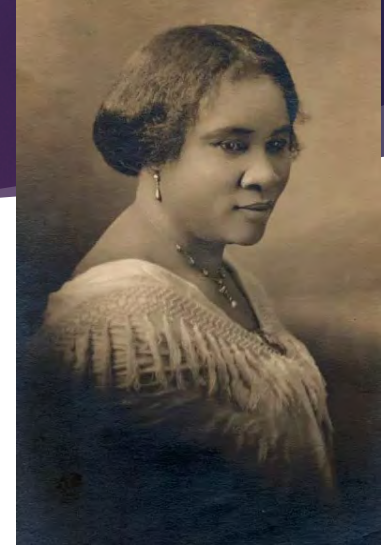
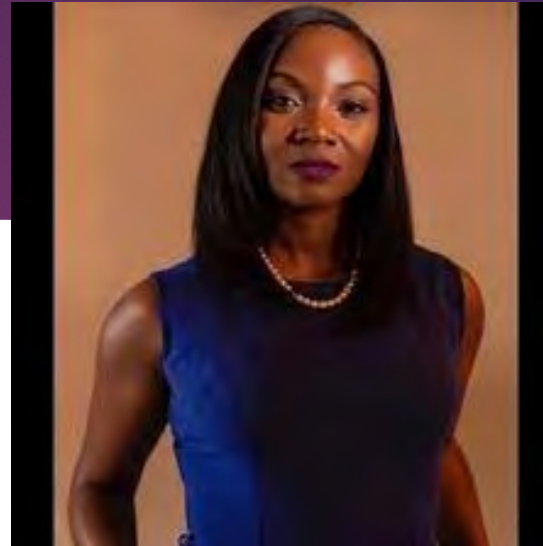
- ▶ Name
- ▶ College
- ▶ Year and Major



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# Understanding Your Greatness (Cultural Assets)

YOUR PHOTO  
HERE



# Understanding Your Greatness (Cultural Assets)



# Ujima GIRL Project Overview

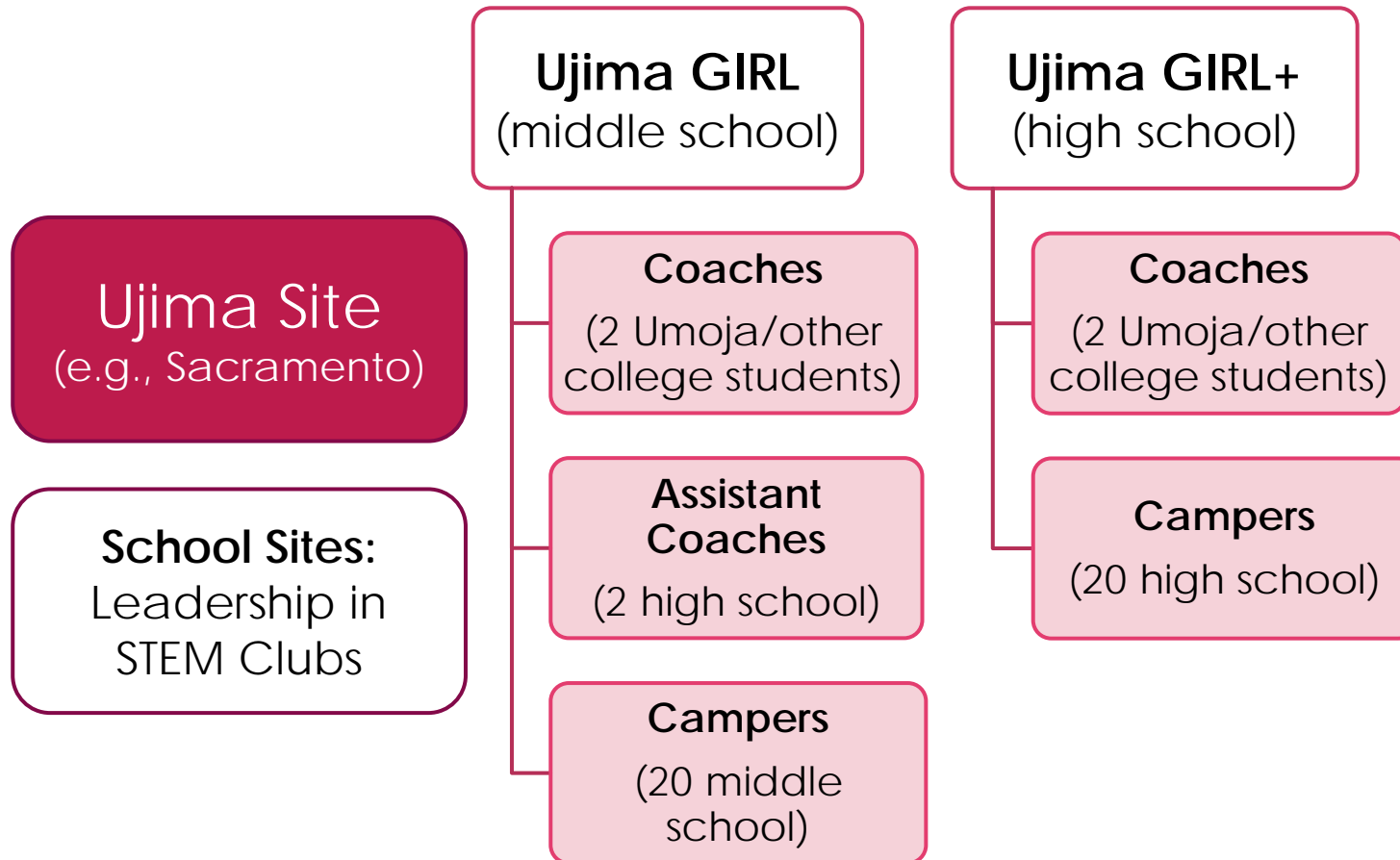
- ▶ *Ujima* is a three-year collaborative effort
  - ▶ University of California (UC) Davis C-STEM Center
  - ▶ UC Davis School of Education
  - ▶ Umoja Community Education Foundation
  - ▶ STEM industry partners
  - ▶ School districts throughout California
- ▶ Year 1 (Summer 2022): 8 sites (up to 32 Umoja students)
- ▶ Year 2 (Summer 2023): 16 sites (up to 64 Umoja students)
- ▶ Year 3 (Summer 2024): 24 sites (up to 92 Umoja students)

# Ujima GIRL Project Overview:

## Multiple Levels of Engagement with Black Girls and Women

**Leadership Team:** Dr. Mustafaa, Dr. Aldredge, TBD Program Director

**Mentors:** Black Women in STEM Industry



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# Ujima GIRL Project Overview

- ▶ Introduce sensor-based robotics and physical computing principles and techniques
- ▶ Provide a culturally-relevant mentoring approach (Umoja Practice)
- ▶ Increase self-confidence and engagement (Umoja Practice)
- ▶ Develop leadership skills (Informal STEM Learning-ISL)

# C-STEM GIRL/GIRL+ Example



Mya Wright, C-STEM GIRL/GIRL+ Participant

# *Why* the Ujima GIRL Project is Important

- ▶ Untapped brilliance
- ▶ Identity development and reinforcement
- ▶ Culturally-relevant STEM education through ISL
- ▶ Building a pipeline
  - ▶ STEM industry
  - ▶ STEM education
  - ▶ STEM leadership



Tallahassee Community College programs that support diversity, equity and inclusion include the Student Leadership Retreat. (Photo: TCC)

# Career Opportunities

- ▶ Design Engineer
- ▶ Software Engineer
- ▶ Hardware Engineer
- ▶ User Experience (UX) Designer
- ▶ Data Scientist
- ▶ Machine Learning Engineer
- ▶ Algorithm Engineers
- ▶ Robotics Engineer
- ▶ Robotics Technician
- ▶ Sales Engineer
- ▶ Software Developer
- ▶ Robotics Operator
- ▶ K-12 STEM Teacher
- ▶ STEM Professor
- ▶ STEM Education Administrator
- ▶ ISL Program Staff



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community

## Tips & Strategies

- ▶ GPA Matters
- ▶ Look at non-STEM majors
- ▶ Look at hidden majors within different majors
- ▶ Think about minors
- ▶ Check to see if you can change from one major to another

# Your Assignment

Imagine you are a reporter for the community newspaper. You have the job of creating headlines for the paper, and your life is the topic.

Headlines should be no more than ten to fifteen words long and should give the reader a good sense of what the story would be about.

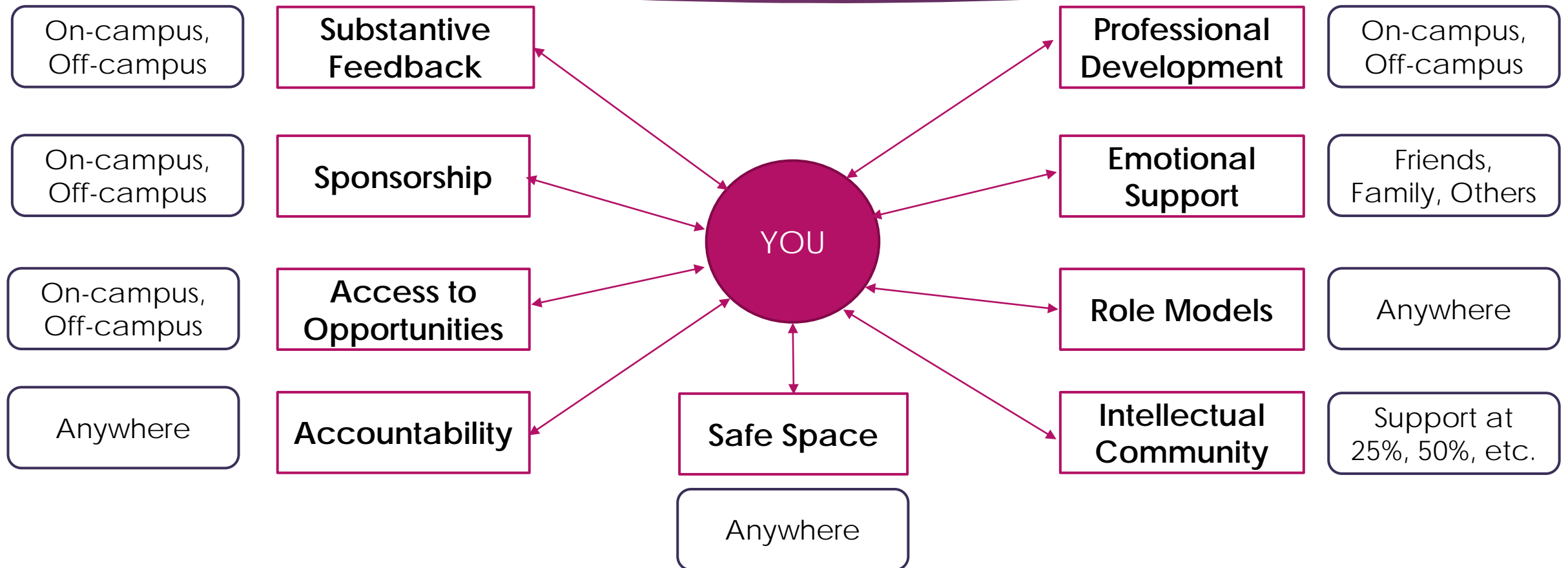
*(e.g., Minority Leader: How to Lead From the Outside and Make Real Change, Stacey Abrams, 2018)*

- ▶ Write the newspaper headline about you in the next three to five years:
  - ▶ Personally
  - ▶ Professionally
  - ▶ In the Community

# Brief Robotics Demonstration



# Building Leadership Skills: Your Mentoring Map



# Each One Teach One

- ▶ Do I have to be a STEM major, minor, or have robotics experience? **No**
  - ▶ Self-identified African American/Black woman
  - ▶ Willing to learn/try something new and teach it to middle-high school girls
  - ▶ Available for training in Spring 2022, and Ujima GIRL/GIRL+ in the summer
- ▶ How long are the camps?  
**1 week each for Ujima GIRL and Ujima GIRL+**
- ▶ Is this a paid opportunity? **Yes, coaches will receive a stipend**
- ▶ Other questions?

# Acknowledgements & Contact Information

Dr. Harry Cheng  
Ujima PI and C-STEM Director

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C-STEM Program Manager

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