

NASA/ Georgia Space Grant Consortium

AFFILIATES

Armstrong Atlantic State University*

Albany State University*

Clark Atlanta University*

Columbus State University

Fort Valley State University*

Georgia Institute of Technology - Lead Institution

Georgia Southern University

Georgia State University

Kennesaw State University

Mercer University

Morehouse College*

North Georgia College and State University

ORBIT Education, Inc.

Savannah State University

SpaceWorks Enterprises, Inc.

Spelman College*

University of West Georgia

University of Georgia

PARTNERS

Agnes Scott College

Museum of Aviation

**HBCU or Minority Serving Institutions*

Dr. Stephen Ruffin -
GSGC Director

Ms. Wanda Pierson -
GSGC Program Manager

Consortium Description

The Georgia Space Grant Consortium (GSGC) was established in 1989 to develop a statewide network of academic, industry, and non-profit partners dedicated to...

Maximize the number of Georgia students from all backgrounds who are well-prepared in science, technology, engineering, and mathematics (STEM) fields and who are motivated to support space and aeronautics programs vital to this nation.

The GSGC has 18 affiliate members and 2 partner organizations serving both metropolitan and rural

areas of the state. The GSGC team includes six Historically Black Colleges and Universities

and two women-serving institutions.

Georgia ranks 8th in U.S. aerospace industry employment with nearly 200 aerospace companies with operations in Georgia. GSGC uniquely prepares students in STEM disciplines with its affiliates training and graduating thousands of students annually to meet this critical state need and the needs of NASA.



Summary of Programs

GSGC conducts research, internships, scholarships, fellowships, K-12 student and teacher training programs and public outreach. These program include:

- Higher Ed/Workforce Development
 - Fellowships, Scholarships
 - NASA and Industry Internships
 - Student & Faculty Research
 - Hands-On Programs (K-12 and College)
 - Faculty Research
- Teacher Training
 - Hands-On Workshops
 - College of Education teaming
- Public Outreach
 - Museum & Planetarium Programs
 - Camps and Science Programs
 - Media Interaction

Program Impact

Substantial impact achieved in training future engineers, scientists, and STEM educators. The GSGC:

- **Annually supports diverse set of 115 undergraduate and graduate students per year in research projects, internships, scholarships and fellowships**
- **Annually provides STEM education and hands-on activities at schools and science centers to 30,000 Georgia residents**
- **Annually supports K-12 teacher professional development to over 4,400 educators**
- **Has funded 100 Ph.D. recipients in STEM fields over GSGC history**

Student Highlight

Kalesha Bullard

PhD Student, Georgia Institute of Technology

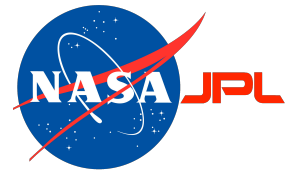
B.S. and M.S. Graduate, University of Georgia

I am a Ph.D. student in Computer Science program at the Georgia Institute of Technology and am also pursuing a minor in Cognitive Psychology. My research concentration is Human Robot Interaction and Interactive Learning. I began graduate study at the University of Georgia (UGA) where I received my Master's Degree in Educational Psychology and Bachelor's degree in Mathematics Education. I have been able to utilize my unique combination of degrees in technology and education in two consecutive summer internships at the NASA Jet Propulsion Laboratory, and also in STEM outreach in underrepresented communities in metropolitan Houston and Atlanta.



Technical Accomplishments

During the summer of 2012, I received funding from the Georgia Space Grant Consortium to participate in a summer internship at the NASA Jet Propulsion Laboratory (JPL). My project was to build an ontology development and reasoning system. I returned to JPL again for the summer of 2013 and currently work in the Artificial Intelligence Group. My project this summer is more correlated with my long-term research interests, where here, the goal is to develop an interactive planning system for a team of mobile robots exploring a planetary surface, in collaboration with a human scientist. The system is designed to enable the robot with the cognitive capabilities to figure out if and when to query the human scientist for assistance, whenever uncertainty arises in achieving a goal. I also received Honorable Mention for the Ford Foundation Fellowship program in 2013, and was awarded a National Science Foundation (NSF) Graduate Research Fellowship from 2009-2012. As an NSF Fellow I worked on a team to design and simulate an intelligent autopilot for a miniature fixed-wing unmanned aerial vehicle (UAV). Our goal was to build a robust architecture, that integrated genetic algorithms and fuzzy logic methodologies, to autonomously navigate, control and stabilize the vehicle.



Outreach Accomplishments

I taught middle school mathematics for the 2006-2007 school year in the Atlanta Public School District as part of the Knowledge is Power Program (KIPP) national charter school system, where I volunteered to be the girls step team coach. I was also selected as a 2004 Teach for America (TFA) corps member and worked as high school mathematics teacher in the inner-city Houston Independent School District for two years (2004-2006), where I volunteered as an assistant coach of both the track team and girls step team. In 2005, I participated in an NSF-sponsored Research Experiences for Teachers summer program at the University of Houston, contributing to two research projects, both in communications & signal processing. Since returning to Georgia, I have served as

Chairperson of the Educational Development Committee in my sorority, planning activities and providing support for underrepresented youth in the community, and have volunteered to assist with the local high school girls step team. I continue to volunteer for other K-12 STEM mentoring and tutoring opportunities while pursuing my Ph.D.

Publications and Presentations

K. Bullard, "Using Semantic Mapping to Increase Mobile Robot Autonomy in Space Exploration." The University of Georgia Department of Computer Science External Advisory Board Meeting, 2012,

Poster, Qu, Y., S. Pandhiti, K.S. Bullard, W.D. Potter, and K.F. Fezer, "Development of a Genetic Fuzzy Controller for an Unmanned Aerial Vehicle" Modern Approaches in Applied Intelligence, Lecture Notes in Artificial Intelligence, 2011, Vol. 6703, pp. 328-335.