2019 Summer Research Symposium

Thursday, August 1, 1:30 – 3:00 pm, Hollings Program Room in the Thomas Cooper Library

Sponsored by the Office of the Vice President for Research

SC Advancing Diversity in Aging Research Program

1 - Is Grandma still Smoking Cigarettes? Detect Smoking Events using AI in Smartwatch Technology
   **Alaina Smith**, Claflin University, Orangeburg, SC, Computer Science-Junior
   Mentors: Dr. Homayoun Valafar, USC Columbia, Computer Science and Engineering
   Mr. Chrisogonas Odhiambo, USC Columbia, Computer Science and Engineering

2 - Automated Fall Detection Using Artificial Intelligence with Smartwatch Data
   **Jasmine McKenzie**, Claflin University, Orangeburg, SC, Computer Science-Junior
   Mentors: Dr. Homayoun Valafar, USC Columbia, Computer Science and Engineering
   Mr. Chrisogonas Odhiambo, USC Columbia, Computer Science and Engineering

3 - Test-Retest Reliability of a Measure of Structural Integrity of Interhemispheric Motor Pathways in Chronic Stroke
   **Kiariah Muller**, Claflin University, Orangeburg, SC, Biology-Senior
   Mentors: Dr. Jill Stewart, USC Columbia, Columbia, SC, Physical Therapy Program, Exercise Science
   Ali Lewis, USC Columbia, Physical Therapy Program, Exercise Science

4 - Barriers that may Negatively Affect Cervical and Colorectal Cancer Prevention and Interventions Among Rural Health Care Providers
   **Chesni Cobb**, Claflin University, Orangeburg, SC, Biology-Junior
   Mentor: Dr. Jan Eberth, USC Columbia, Epidemiology and Biostatistics

5 - Health status of older Hispanic populations in South Carolina
   **Monai Mitchell**, Claflin University, Orangeburg SC, Biology-Senior
   Mentor: Dr. Myriam Torres, USC Columbia, Public health

6 - The Investigation of Resveratrol Regulated Gene Expression in the Gut (Small Intestine and Colon) in Mice with EAE
   **Zhane Chandler**, Claflin University, Orangeburg, SC, Biology-Senior
   Mentor: Dr. Narendra Singh, USC School of Medicine, Pathology, Microbiology and Immunology

7 - Influence of socioeconomic and financial factors on the use of adjuvant hormonal therapy among older adults diagnosed with breast cancer
   **Terika Williams**, Claflin University, Orangeburg, SC, Biology-Senior
   Mentor: Dr. Tisha Felder, USC Columbia, Columbia, SC, Nursing
8 - Privacy and Security for Telehealth Devices  
**London Thompson**, Claflin University, Orangeburg, SC, Computer Engineering-Junior  
Mentor: Dr. Csilla Farkas, USC Columbia, Computer Science and Engineering

9 - The Effect of Ing4 Knockdown on Hematopoiesis  
**Eden Wiggins**, Claflin University, Orangeburg, SC, Biology-Junior  
Mentor: Dr. Katie Katherein, USC Columbia, Biological Sciences

10 - Influence of obesogenic diets on adipose and ovarian tissue aging in drosophila melanogaster  
**Kristin Tolbert**, Claflin University, Orangeburg, SC, Biology-Junior  
Mentor: Dr. Alissa Armstrong, USC Columbia, Biological Sciences

**Summer Research Internship**

11 - Depletion of serotonin regulates leptin’s ability to reduce food intake  
**Katie Jimenez**, College of Charleston, Charleston, SC, Psychology-Senior  
Mentors: Dr. Claudia Grillo, USC School of Medicine, Pharmacology, Physiology, and Neuroscience  
Dr. Lawrence Reagan, USC School of Medicine, Pharmacology, Physiology, and Neuroscience

12 - The Effect of Intranasal Leptin Administration on feeding behavior and neuronal activation  
**Jesseca Crawford**, College of Charleston, Charleston, SC, Biology-Senior  
Mentors: Dr. Claudia Grillo, USC School of Medicine, Pharmacology, Physiology & Neuroscience  
Dr. Lawrence Reagan, USC School of Medicine, Pharmacology, Physiology & Neuroscience

**McNair Junior Fellows Program**

13 - Autonomous 3D Coverage of Underwater Structures  
**James Johnson**, USC Columbia, Computer Engineering-Sophomore  
Mentors: Dr. Ioannis Rekleitis, USC Columbia, Computer Science and Engineering  
Ms. Nare Karapetyan, USC Columbia, Computer Science and Engineering

14 - Detection of CRISPR Mediated Nucleic Acids using Biological Nanopore  
**Roberto Gambarini**, USC Columbia, Biomedical Engineering-Senior  
Mentor: Dr. Chang Liu, USC Columbia, Biomedical Engineering

15 - Assessing the ability of resveratrol releasing scaffolds to support healthy dietary changes as a treatment strategy for type 2 diabetes  
**Hayley Hall**, USC Columbia, Biomedical Engineering-Junior  
Mentor: Dr. Michael Gower, USC Columbia, Biomedical Engineering

16 - Sustainable healthy building design  
**Lisa Falta**, USC Columbia, Civil Engineering-Senior  
Mentor: Dr. Shamia Hoque, USC Columbia, Civil and Environmental Engineering

17 - Examining Photoactive Properties of Polymer-Metal Composites for Solar Energy Harvesting  
**Natalie Duprez**, USC Columbia, Chemical Engineering-Senior  
Mentor: Dr. Kenneth Roberts, USC Columbia, Chemical Engineering

18 - Data Driven Composites  
**Andrew Anderson**, USC Columbia, Mechanical Engineering-Junior  
Mentor: Dr. Ramy Harik, USC Columbia, Mechanical Engineering
19 - Development of an open source, customizable, 3D printed mini quadcopter
**Andrew Re**, USC Columbia, Mechanical Engineering-Senior
Mentor: Dr. Nikos Vitzilaios, USC Columbia, Mechanical Engineering

20 - 3D evaluation and optimization of gas diffusion layers (GDL) for PEM fuel cells through computational fluid dynamics (CFD)
**John Weiss**, USC Columbia, Chemical Engineering-Junior
Mentor: Dr. John Weidner, USC Columbia, Chemical Engineering

21 - Vulnerability Assessment of Storm Water Management Ponds to Sea Level Rise in Coastal Regions of South Carolina
**Carly Lawyer**, USC Columbia, Civil & Environmental Engineering-Senior
Mentor: Dr. Erfan Goharian, USC Columbia, Civil and Environmental Engineering

22 - Learning Bayesian Network Structures using Curriculum Learning
**Tristan Klintworth**, USC Columbia, Computer Science-Senior
Mentors: Prof. Pooyan Jamshidi, USC Columbia, Computer Science
Mr. Mohammad Javidian, USC Columbia, Computer Science

23 - An Experimental Investigation to the plastic flow and strain hardening of Aluminum alloy using 3D digital image correlation
**Andrew Campbell**, USC Columbia, Mechanical Engineering-Senior
Mentor: Dr. Michael Sutton, USC Columbia, Mechanical Engineering
Mrs. Farzana Yasmeen, USC Columbia, Mechanical Engineering

24 - Influence of Tannic Acid on Aβ Oligomer-Induced Inflammation Associated with Alzheimer’s Disease
**Taylor Bauman**, USC Columbia, Biomedical Engineering-Junior
Mentor: Dr. Melissa Moss, USC Columbia, Biomedical Engineering

25 - Viscoelastic Response of Thermoplastic - Carbon Fiber Specimen PEEK/AS4
**Elsa Compton**, USC Columbia, Mechanical Engineering-Senior
Mentors: Dr. Michael Sutton, USC Columbia, Mechanical Engineering
Mr. Sreehari Rajan, USC Columbia, Mechanical Engineering

26 - Characterization of NOx formation in the hydrocarbon post-flame zone
**Lucas Dull**, USC Columbia, Mechanical Engineering-Senior
Mentor: Dr. Sang Hee Won, USC Columbia, Mechanical Engineering

27 - Sustainable, Healthy Building Design, Part II: Effects of Ventilation Design on Bacterial Transport
**Shilpkumar Patel**, USC Columbia, Civil Engineering-Senior
Mentor: Dr. Shamia Hoque, USC Columbia, Civil and Environmental Engineering

28 - Hierarchical State Estimation of an Underwater Robot
**Hunter Damron**, USC Columbia, Computer Science and Mathematics-Junior
Mentor: Dr. Ioannis Rekleitis, USC Columbia, Computer Science and Engineering
*Also supported by SCHC SURF Grant*

29 - Synthesis of Core-Shell Structures for Carbon Dioxide and Hydrogenation
**Eboni Brown**, USC Columbia, Chemical Engineering-Sophomore
Mentor: Dr. Erdem Sasmaz, USC Columbia, Chemical Engineering
*Also supported by SC Alliance for Minority Participation*
30 - Leak detection while composite tube undergoes flexure testing
**Omari Adams**, USC Columbia, Mechanical Engineering-Junior
Mentor: Dr. Xinyu Huang, USC Columbia, Mechanical Engineering
*Also supported by SC Alliance for Minority Participation*

31 - Channel configuration
**Brandon Fryson**, USC Columbia, Civil engineering-Senior
Mentor: Dr. Enrica Viparelli, USC Columbia, Civil and Environmental Engineering
*Also supported by SC Alliance for Minority Participation*

**Integrated Academia-Industry REU in Smart Structure Technologies**

32 - Optimization of Speckle Patterns for Digital Image Correlation on Prestressed Concrete
**Margaret Morgan**, University of Kansas, Lawrence, KS, Architectural Engineering -Sophomore
**Inzamamdeen Kassim**, CUNY City College of New York, New York City, NY, Civil Engineering-Junior
Mentor: Dr. Juan Caicedo, USC Columbia, Civil and Environmental Engineering

33 - Augmented Reality for Structural Component Identification
**Nicole Russo**, University of Maryland, College Park, MD, Civil Engineering-Junior
**Julia Bulaw**, University of Alabama, Tuscaloosa, AL, Civil Engineering-Senior
Mentors: Dr. Juan Caicedo, USC Columbia, Civil Engineering
Dr. Zhaoshuo Jiang, San Francisco State University, San Francisco, CA-Civil Engineering

**REU in Applied Computational Robotics**

34 - Comparison of Open-Source LiDAR Data Reconstruction Packages
**Ulunma Egwim**, Spelman College, Atlanta, GA, Computer and Information Sciences-Senior
Mentors: Dr. Ioannis Rekleitis, USC Columbia, Computer Science & Engineering
Dr. Jason O’Kane, USC Columbia, Computer Science and Engineering

35 - Development of Different Motion Patterns for Underwater Navigation
**Micah Crumpton**, USC Columbia, Computer Engineering-Senior
Mentors: Dr. Ioannis Rekleitis, USC Columbia, Computer Science & Engineering
Dr. Jason O’Kane, USC Columbia, Computer Science and Engineering

36 - Aggregating large populations of simple robots in piecewise-algebraic environments
**Rachel Moan**, Winthrop University, Rock Hill, SC, Computer Science and Math-Sophomore
Mentor: Dr. Jason O’Kane, USC Columbia, Computer Science and Engineering

37 - A Warm Restart Framework for 3D Underwater Motion Planning
**Amy O’Connell**, Vassar College, Poughkeepsie, NY, Computer Science-Senior
Mentors: Dr. Ioannis Rekleitis, USC Columbia, Computer Science & Engineering
Mr. Marios Xanthidis, USC Columbia Computer Science & Engineering

38 - Activity Recognition with Sparse Sensors and Wild Bodies
**Christopher Clement**, Florida International University, Miami, FL, Computer Science-Senior
Mentor: Dr. Jason O’Kane, USC Columbia, Computer Science and Engineering

39 - Planning trajectories for Dubins-constrained cinematic robots
**Jonathan Rietveld**, Trinity Christian College, Palos Heights, IL, Computer Science and Mathematics-Senior
Mentor: Dr. Jason O’Kane USC Columbia, Computer Science & Engineering
40 - Transformation as a Defense to Adversarial Attacks against Deep Neural Network
**Rabina Phuyel**, Berea College, Berea, KY, Computer Science and Mathematics-Junior
Mentor: Dr. Pooyan Jamshidi, USC Columbia, Computer Science and Engineering

41 - Action plans with guaranteed coverage using unreliable robots
**Jacob McCullough**, University of New Mexico, Albuquerque, NM, Computer Science-Senior
Mentor: Dr. Jason O’Kane, USC Columbia, Computer Science and Engineering

42 - Transfer Learning for Policy Adaptation to Altered Environments
**Joshua Ravishankar**, Middlebury College, Middlebury, VT, Computer Science-Senior
Mentors: Dr. Pooyan Jamshidi, USC Columbia, Computer Science and Engineering
Dr. Jason O’Kane, USC Columbia, Computer Science and Engineering
Mr. Jianhai Su, USC Columbia, Computer Science

**SC Alliance for Minority Participation Program**

43 - Whole Earth Book Catalog: A Topography of Global Book History
**Vasco Madrid**, USC Columbia, Computer Science-Junior
Mentor: Dr. Colin Wilder, USC Columbia, History

44 - Digital Twin Development - Desalination System
Mentor: Ms. Rhea Matthews, USC Columbia, McNAIR Aerospace Center

45 - Measurement of Bromide and Iodide in South Carolina Rivers
**Terrica Bowers**, Midlands Technical College, Columbia, SC, Chemistry-Senior
Mentor: Dr. Susan Richardson, USC Columbia, Chemistry and Biochemistry

46 - Straight-party voting and its effects on down ballot participation
**Garrison Davis**, USC Columbia, Computer Science-Sophomore
Mentor: Dr. Duncan Buell, USC Columbia, Computer Science and Engineering

47 - Bed Form Geometry Development
**Jeffrey Okeke**, USC Columbia, Civil Engineering-Senior
Mentor: Dr. Enrica Viparelli, USC, Columbia, Civil and Environmental Engineering

48 - Field and Lab Evaluation of the Pavement Subsurface in the South Carolina Road Network
Mentors: Dr. Charles Pierce, USC Columbia, Civil and Environmental Engineering
Dr. Sarah Gassman, USC Columbia, Civil and Environmental Engineering

49 - Heat Transport Enhancement during water condensation using different Hydrophobic Coatings
**Lakerri Adams**, USC Columbia, Chemical Engineering-Junior
Mentors: Dr. Xinyu Huang, USC Columbia, Mechanical Engineering
Dr. Myoungseok Lee, USC Columbia, Mechanical Engineering

**SMART Program**

50 - The role of family support incarcerated youth prior to incarceration
**Courtney Black**, USC Beaufort, Bluffton, SC, Human Services-Junior
Mentor: Dr. Dawn Robinson, USC Beaufort, Bluffton, SC, Human Services
51 - Examining the baseline demographic characteristics and the perceived affect of stress due to food security and food insecurity in the Nutritious Eating With Soul (NEW Soul) Study

Mikayla Nelson, USC Columbia, Public Health-Senior
Mentors: Dr. Brie Turner-McGrievy, USC Columbia, Health, Promotion, Education and Behavior
Ms. Mary Wilson, USC Columbia, SC, Health, Promotion, Education and Behavior

52 - How does art and film impact immigration trends in European crossroads?

Binyamen Washington, USC Beaufort, Beaufort, Studio Art-Senior
Mentor: Dr. Juanita Alvarez, USC Beaufort, Humanities

STEM

53 - Population Study of Large Bacteriophages from Rocky Branch Creek

Quill Thomas, USC Columbia, Biochemistry and Molecular Biology-Senior
Mentor: Dr. Bert Ely, USC Columbia, Biological Sciences

54 - Flame Synthesis of Pd/CeO2 Catalysts for Reforming and Oxidation Reactions

Jackson Jordan, USC Columbia, Chemical Engineering-Junior
Mentors: Dr. Erdem Sasmaz, USC Columbia, Chemical Engineering
Mr. Musa Najimu, USC Columbia, Chemical Engineering

55 - ALGE3D: Verification Test and Input Files for a 3-D transport model

Tristan Richardson, USC Columbia, Civil Engineering-Senior
Dr. Grace Maze, Savannah River National Laboratory, Aiken, SC, Atmospheric Technologies Group

Health Sciences

56 - Prospective Relation between Periodontal Disease and Gestational Diabetes

Craig Correia, USC Columbia, Public Health -Senior
Mentor: Dr. Anwar Merchant, USC Columbia, Epidemiology and Biostatistics

Social Sciences

57 - The Changing Political Economy of Electricity in the United States

Ben Garris, USC Columbia, Political Science & Environmental Studies-Junior
Mentor: Dr. Conor Harrison, USC Columbia, Geography

58 - Anyone Can Learn at Any Age

Tamara Nurse, USC Columbia, Integrated Information Technology-Senior
Mentor: Ms. Gina Spence, USC Columbia, USC Connect

59 - Exploring the Relation between Experimental and Naturalistic Social Looking in Preschoolers with Autism Spectrum Disorder

Felicia McGill, USC Columbia, Mathematics-Sophomore
Angelica Walker, Yale College, New Haven, CT, Neuroscience-Junior
Dr. Jane Roberts, USC Columbia, Psychology
Ms. Carla Wall, USC Columbia, School Psychology