Research Match Making Session - Tuesday, November 17, 2015 – 4:00 p.m. - 5:30 p.m.

Table: 1
PI(s): David Clark, Neurology/Cognitive Science/Artificial Intelligence, MUSC
Email: clarkda@musc.edu
Seeking # of students: 1 or 2
Desired start date: Anytime
Time period of the project: continuous
Research Summary/Student Expectations: My research focuses on prediction of outcomes in patients with suspected neurodegenerative disease. The predictions are generated by means of machine learning methods. Most of the work has roots in natural language processing, but projects involving image analysis are also possible. Interested students will need some ability to program in R, Julia, or Python— or at least willingness to learn.

Table: 2
PI(s): Doug Wolfe, Neuroscience, MUSC
Email: roberdj@musc.edu
Seeking # of students: 1 or 2
Desired start date: ASAP
Time period of the project: Continuous
Research Summary/Student Expectations: Addiction animal models. No prior experience required.

Table: 3
PI(s): Courtney Murren, Matt Rutter, Allan Strand (UNPAK), Biology, College of Charleston
Email: murrenc@cofc.edu
Seeking # of students: 1or2
Desired start date: spring/summer
Time period of the project: continuous
Research Summary/Student Expectations: phenotyping natural variation and mutational variation of Arabidopsis thaliana, greenhouse, growth chamber, data analysis and interpretation.

Table: 3
PI(s): Bob Podolsky, Biology/Grice Marine Lab, College of Charleston
Email: podolskyr@cofc.edu
Seeking # of students: 2-3
Desired start date: asap/spring
Time period of the project: continuous
Research Summary/Student Expectations: My lab focuses on the ecology and functional biology of marine invertebrates. I am looking for 2-3 students to work on different projects: 1) effects of ocean acidification on the development of marine snails, 2) effects of
ocean acidification on sea urchin sperm metabolism, 3) comparative body form of sea spiders, 4) invasion biology of the green porcelain crab.

Table: 4
PI(s): Tatyana Gudz, Neuroscience, MUSC
Email: gudz@musc.edu
Seeking # of students: 1 or 2
Desired start date: ASAP
Time period of the project: continuous
Research Summary/Student Expectations:
Cellular mechanisms of traumatic brain injury. Baseline understanding of cell biology concepts and general computer skills are helpful.

Table: 4
PI(s): Angie Cason, Neuroscience, MUSC
Email: casona@musc.edu
Seeking # of students: 1-3
Desired start date: ASAP
Time period of the project: continuous
Research Summary/Student Expectations:
Neural networks in motivated behavior and food reward.

Table: 5
PI(s): Sorienel Oprisan, Physics & Astronomy, College of Charleston
Email: oprisans@cofc.edu
Seeking # of students: 1 or 2
Desired start date: Spring/summer
Time period of the project: continuous
Research Summary/Student Expectations: We are looking for motivated students interested in applying mathematics and programming to following bio(medical) problems: (1) Implement computational models of biological neural networks (models of interval timing). (2) Analyze experimental data to extract patterns of electrical activity (optogenetics). (3) Implement computer models for brain-computer interfaces.

Table: 5
PI(s): Alexander V. Alekseyenko, Biomedical Informatics, Human Microbiome Research, MUSC
Email: alekseye@musc.edu
Seeking # of students: 1 or 2
Desired start date: anytime
Time period of the project: flexible
Research Summary/Student Expectations: Our grand challenge is to build actionable predictive models from electronic health records and microbiome data to predict patient outcomes. We apply quantitative skills in mathematics, statistics, data science, and computer science to decipher the role of microbes in human health. We have a range of projects in data analysis, software development, mathematical modeling, statistical method development, method benchmarking and bioinformatics for students to apply their knowledge and to learn the problem domain.

Table: 6
PI(s): Jason Howell, Mathematics, College of Charleston
Email: howelljs@cofc.edu
Seeking # of students: 1 or 2
Desired start date: Spring/summer
Time period of the project: Spring/summer
Research Summary/Student Expectations: Projects in computational mathematics including solving large sparse linear systems of equations, continuation methods, and computation of solubility parameters. Students need to have taken multivariable calculus and linear algebra.
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**PI(s):** Dave Boucher, Chemistry, College of Charleston  
**Email:** boucherds@cofc.edu  
**Seeking # of students:** 2  
**Desired start date:** Spring/summer  
**Time period of the project:** continuous  
**Research Summary/Student Expectations:**  
Projects in polymer physics focusing on (1) a molecular level description of solvent-induced polymer self-assembly and (2) the calculation and interpretation of solubility parameters within the context of intermolecular polymer-solvent interactions. NO EXPERIENCE NECESSARY.

**Table:** 7

**PI(s):** Justin Webster, Mathematics, College of Charleston  
**Email:** websterj@cofc.edu  
**Seeking # of students:** 1  
**Desired start date:** 5/1/2016  
**Time period of the project:** Continuous; Two Consecutive Summers  
**Research Summary/Student Expectations:**  
Numerical and analytical study of mathematical models of fluttering beams. Junior or sophomore mathematics students (or physics) with a baseline understanding of differential equations and some experience with computational tools.

**Table:** 7

**PI(s):** Michael Scofield, Neuroscience, MUSC  
**Email:** scofield@musc.edu  
**Seeking # of students:** 1 or 2  
**Desired start date:** ASAP  
**Time period of the project:** Continuous  
**Research Summary/Student Expectations:**  
Addiction animal models. No prior experience required.

**Table:** 8

**PI(s):** Paul Anderson, Computer Science, College of Charleston  
**Email:** andersonpe2@cofc.edu  
**Seeking # of students:** 3  
**Desired start date:** Spring  
**Time period of the project:**  
**Research Summary/Student Expectations:** Data Science, Machine Learning, Bioinformatics, and Computational Genomics Research

**Table:** 8

**PI(s):** James Newhard, Archaeology, College of Charleston  
**Email:** newhardj@cofc.edu  
**Seeking # of students:** 1 or 2  
**Desired start date:** Spring 2016  
**Time period of the project:** continuous  
**Research Summary/Student Expectations:**  
Our current work focuses upon archaeological applications of GIS, particularly in the modeling of past human activity and land use over long trajectories of time. Immediate projects include optimizing developed geospatial models using ArcGIS and Python, improvement upon established least-cost path models, and evaluating modeled communication routes. Experience in ArcGIS and/or Python is needed.

**Table:** 9

**PI(s):** Edith Williams, Public Health Sciences, MUSC  
**Email:** wiled@musc.edu  
**Seeking # of students:** 1 or 2  
**Desired start date:** Spring 2016  
**Time period of the project:** continuous  
**Research Summary/Student Expectations:** I am developing a peer mentoring intervention for African American women with lupus.

**Table:** 9

**PI(s):** Donna Roberts, Neuroradiology, MUSC  
**Email:** robertdr@musc.edu
Seeking # of students: 1 or 2
Desired start date: anytime
Time period of the project: continuous
Research Summary/Student Expectations: My work is funded by NASA to understand what happens to the human brain in long-term spaceflight. We are analyzing MRI brain scans and venograms to look for factors that might contribute to intracranial pressure changes that occur in astronauts on the International Space Station. A second project is to understand the brain injury that occurs in infants suspected to have undergone child abuse. We are performing white matter tracing to look for evidence of traumatic brain injury in these infants.

Table: 10
PI(s): Elizabeth Jurisich, Mathematics, College of Charleston
Email: jurisiche@cofc.edu
Seeking # of students: 1 to 3
Desired start date: spring
Time period of the project: Spring Semester
Research Summary/Student Expectations: Visual representation of mathematics. Realizing groups as symmetries acting on 3D objects, and projections of higher dimensions. Skills: Linear algebra, graphics, 3d printing, sculpting.

Table: 11
PI(s): Jim Bowring, Computer Science, College of Charleston
Email: bowringj@cofc.edu
Seeking # of students: 2
Desired start date: Spring
Time period of the project: continuous
Research Summary/Student Expectations: Software Engineering for Geo - Science and Informatics; motivated and inquisitive

Table: 11
PI(s): Christine Byrum, Biology, College of Charleston
Email: byrumc@cofc.edu
Seeking # of students: 1 or 2
Desired start date: Spring
Time period of the project: continuous
Research Summary/Student Expectations: Mapping distribution of nuclear transport proteins in the developing sea urchin embryo; motivated and able to drive to SCRA.

Table: 12
PI(s): Dan McGlinn, Biology, College of Charleston
Email: mcglinndj@cofc.edu
Seeking # of students: 1
Desired start date: Spring/summer
Time period of the project: continuous
Research Summary/Student Expectations: Why are tropical plant communities more diverse than temperate communities? Students should have an interest in ecology, statistics, and programming.

Table: 12
PI(s): Andrew Clark, Biology, College of Charleston
Email: clarkaj@cofc.edu
Seeking # of students: 1 or 2
Desired start date: Spring 2016
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**Time period of the project:** continuous

**Research Summary/Student Expectations:** NSF-funded research on the biomechanics of jawless biting in hagfishes. Research activities will include but are not limited to: animal husbandry, gross anatomical dissections, biomaterial testing, high-speed video and motion analysis. Student(s) should be interested in subjects like zoology, physics, anatomy and physiology. Student(s) must able to drive to SCRA.

**Table: 13**

**PI(s):** Cynthia Wright, Grad Studies, MUSC  
**Email:** wrightcf@musc.edu  
**Seeking # of students:** many  
** Desired start date:** summer 2016  
**Time period of the project:** summer  
**Research Summary/Student Expectations:**  
students will spend 10 week internship doing research as part of summer research program - application required.

**Table: 14**

**PI(s):** Andy Shih, Neuroscience, MUSC  
**Email:** shiha@musc.edu  
**Seeking # of students:** 2  
** Desired start date:** ASAP  
**Time period of the project:** continuous  
**Research Summary/Student Expectations:** Our lab visualizes neuronal and vascular activity in the live mouse brain using two-photon fluorescence imaging. We are seeking students to aid in analysis of rich imaging data sets. Opportunities to perform imaging experiments are also available, based on experience. We ensure work performed by students leads to authorship on resulting publications. Our work bears relevance to human stroke, Alzheimer's disease and other forms of dementia.

**Table: 15**

**PI(s):** Jasper Heinsbroek, Neuroscience, MUSC  
**Email:** heinsbro@musc.edu  
**Seeking # of students:** 1 or 2  
** Desired start date:** ASAP  
**Time period of the project:** continuous  
**Research Summary/Student Expectations:**  
Neural networks in motivated behavior and cocaine addiction. Prior experience helpful, but not necessary.
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**PI(s):** Michael Smith, Neuroscience/Neurosurgery, MUSC  
**Email:** smitmic@musc.edu  
**Seeking # of students:** 1 or 2  
**Desired start date:** ASAP  
**Time period of the project:** continuous  
**Research Summary/Student Expectations:** Our lab focuses on understanding the cellular mechanism of brain injury that underlie blast-induced traumatic brain injury (bTBI) and neonatal hydrocephalus. Although the initial injury process differs, secondary cellular injury mechanisms are critical in both brain-injured patient populations. Understanding the signaling cascades of the unknown secondary injury mechanisms should provide a means to develop therapeutic interventions for both disease processes.

**Table: 16**

**PI(s):** Adem Ali, Geology and Environmental Geosciences, College of Charleston  
**Email:** alika@cofc.edu  
**Seeking # of students:** 1 or 2  
**Desired start date:** spring/summer  
**Time period of the project:** Continuous  
**Research Summary/Student Expectations:** Water quality assessment using Satellite and insitu methods in the US. Virgin Islands. Preferable marine science and geoscience students.

**Table: 16**

**PI(s):** Steven Jaume, Geology and Environmental Geosciences, College of Charleston  
**Email:** jaumes@cofc.edu  
**Seeking # of students:** 1-3  
**Desired start date:** Spring 2016  
**Time period of the project:** continuous  
**Research Summary/Student Expectations:** We (Norman Levine and Steven Jaume) have a Charleston Area Earthquake Hazard Mapping Project associated with the Lowcountry Hazard Center in the Department of Geology and Environmental Geosciences. Together with academic engineering (The Citadel, Clemson) and seismology (Virginia Tech, University of Memphis) colleagues plus local geotechnical firms, we are working on improving earthquake hazard and damage potential assessment in the greater Charleston (i.e., Berkeley, Charleston & Dorchester counties) area. IN addition, I (Steven Jaume) am also looking for someone interested in science/seismology education, for work associated with Education and Public Outreach for the Incorporated Reserach Institutions for Seismology.

**Table: 17**

**PI(s):** Dinesh Sarvate, Mathematics, College of Charleston  
**Email:** sarvated@cofc.edu  
**Seeking # of students:** 0-2  
**Desired start date:** ASAP  
**Time period of the project:** Continuous  
**Research Summary/Student Expectations:** Combinatorial Mathematics/Discrete Mathematics: MUST be ready to work everyday and meet in person at least three times a week.

**Table: 17**

**PI(s):** Mukesh Kumar, Mathematics, College of Charleston  
**Email:** kumarm@cofc.edu  
**Seeking # of students:** 1 or 2  
**Desired start date:** ASAP  
**Time period of the project:** Continuous  
**Research Summary/Student Expectations:** Numerical analysis and Matrix computation: I am looking for some interested mathematics/computer science/physics students with background in linear algebra, differential equations, and elementary
numerical analysis. The topics for the project could be designing a new numerical method for solving differential equations, Mixed isogeometric collocation methods, Selective and reduced numerical integration rules for isogeometric analysis, Matrix factorization for linear systems in solving singular perturbation problems, etc.

Table: 18
Pl(s): Greg Smith, Physics & Astronomy, College of Charleston
Email: gmsmith@cofc.edu
Seeking # of students: 1 or 2
Desired start date: Spring 2016
Time period of the project: Continuous
Research Summary/Student Expectations: I work in organic electronics, specifically materials and devices including light-emitting diodes (OLEDs), photovoltaics (OPVs), field-effect transistors (OFETs), and thermoelectrics. My work focuses on the incorporation of nanomaterials with polymer and small molecule organic materials to improve device performance.

Table: 18
Pl(s): Ana Oprisan, Physics & Astronomy, College of Charleston
Email: oprisana@cofc.edu
Seeking # of students: 1
Desired start date: spring 2016
Time period of the project: Continuous
Research Summary/Student Expectations: I work on image and signal processing and experimental study of fluctuations and phase separation in soft condensed matter. The data was recording on microgravity condition aboard international space station.

Table: 19
Pl(s): Lisa McTeague, Psychiatry & Behavioral Sciences, MUSC
Email: mcteague@musc.edu
Seeking # of students: 1 or 2
Desired start date: flexible
Time period of the project: Continuous
Research Summary/Student Expectations: We are running a series of studies on emotional processing in patients with posttraumatic stress disorder and related anxiety and depressive disorders as well as healthy control participants. We use neuroimaging, behavioral, and brain stimulation techniques. This position would be productive for someone interested in exposure to neuroimaging, brain stimulation, experimental design, and data analysis and their application to disorders of emotion regulation.

Table: 19
Pl(s): Leonard Egede/Joni Strom Williams, Medicine, MUSC
Email: stromjl@musc.edu
Seeking # of students: 1 or 2
Desired start date: 1/1/2016
Time period of the project: Continuous
Research Summary/Student Expectations: We will be conducting clinical research to assess health inequities across various chronic disease conditions. The student will be expected to work with an interdisciplinary team and assist with study recruitment, survey administration, and data entry.

Table: 20
Pl(s): Dieter Haemmerich/Davud Asemani, Pediatrics, MUSC
Email: haemmer@musc.edu, Asemani@musc.edu
Seeking # of students: 1 or 2
Desired start date: flexible
Time period of the project: Continuous
Research Summary/Student Expectations: We are looking for students with interest in biophysics, mathematics and electrical engineering or computer science for two projects: (1) Development and testing of a miniature circuit to control a heated microprobe, to be implanted into brain regions for rodent studies. The goal is modulation of the body temperature of rodents via this circuit (2) We are working on nanoparticles filled with chemotherapy agents, to be administered into the blood stream. The particles release the drug once heated, and thus allow delivery of chemotherapy to a targeted region (i.e. tumor). We will build experimental setups to test the particle properties, and develop computer simulations where tissue heating and drug kinetics are simulated.

Table: 20
PI(s): Antonieta Lavin, Neuroscience, MUSC
Email: lavina@musc.edu
Seeking # of students: one
Desired start date: ASAP
Time period of the project: Continuous
Research Summary/Student Expectations:
Addiction research/cognitive dysfunction:
Looking for a student to take charge of a project assessing locomotor activity, stereotypy and stoical interaction in male and female rats sensitized with methamphetamine. Prior experience not necessary. Student will get authorship in manuscripts produced by this research. Lab will provide training.

Table: 21
PI(s): Neal Tonks, Chemistry, College of Charleston
Email: tonksn@cofc.edu
Seeking # of students: 2
Desired start date: Spring 2016
Time period of the project: continuous
Research Summary/Student Expectations:
The primary goal of our research is to develop polymeric materials based on biologically derived raw materials for use in drug delivery, materials science and industrial foams.

Table: 21
PI(s): Marcello Forconi, Chemistry, College of Charleston
Email: forconim@cofc.edu
Seeking # of students: 1 or 2
Desired start date: Spring 2016
Time period of the project: continuous
Research Summary/Student Expectations:
Enzyme catalysis

Table: 22
PI(s): Richard Lavrich, Chemistry, College of Charleston
Email: lavrichr@cofc.edu
Seeking # of students: 2
Desired start date: Spring 2016
Time period of the project: continuous
Research Summary/Student Expectations:
Synthesis, Spectroscopy and Computational Studies of Biomolecules

Table: 22
PI(s): Kate Mullaugh, Chemistry, College of Charleston
Email: mullaghkm@cofc.edu
Seeking # of students: 1 or 2
Desired start date: Spring 2016
Time period of the project: continuous
Research Summary/Student Expectations:
My research seeks to better understand the environmental implications of the use of silver nanoparticles in consumer goods. Laboratory based studies are carried out the understand transformation like silver oxidation and reactions with sulfide and organic material.
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Table: 23
PI(s): Timothy Barker, Chemistry, College of Charleston
Email: barkertj@cofc.edu
Seeking # of students: 42006
Desired start date: Spring 2016
Time period of the project: continuous
Research Summary/Student Expectations: My research centers on developing new organic reactions using transition metal catalysts.

Table: 24
PI(s): Brooke Van Horn, Chemistry, College of Charleston
Email: vanhornba@cofc.edu
Seeking # of students: 1 or 2
Desired start date: Summer 2016
Time period of the project: continuous
Research Summary/Student Expectations: One major focus of our group centers around creating polymeric materials for biomedical applications using post-polymerization reactions to add on functionality. Recently we have been creating x-ray opaque biodegradable polymers by coupling iodine-containing small molecules. We are also branching into some fundamental studies of how functional monomers polymerize (the same or differently) under various polymerization conditions.

Table: 23
PI(s): Michael Giuliano, Chemistry and Biochemistry, College of Charleston
Email: giulianomw@cofc.edu
Seeking # of students: 1 or 2
Desired start date: Spring-Summer 2016
Time period of the project: continuous
Research Summary/Student Expectations: In my lab we carry out research in bioorganic chemistry; an area in the space between organic and biochemistry. As a new laboratory here at CofC we are starting up in two main thrusts of research. In the first, we are studying the relationship between amino acid sequence and structure in a class of molecules important for neurological signaling - mood, appetite, sleep cycles, pain perception and anxiety are only a few of the processes affected by these so called ‘neuropeptides’ and we believe that their structure and sequence are intimately tied to their function. In the second thrust we are utilizing visible light and atmospheric oxygen as chemical reagents to synthesize useful organic molecules such as amino acids and hydroxy acids, both of which can be found in a wide array of natural products in addition to proteins, such as nonribosomal peptide antibiotics. Students will be primary investigators in their area of choice and will work with me to design their project during their tenure in my research group, with long term goals of presenting at a conference and contributing substantially to a scientific publication.
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expected to conduct laboratory research and attend group meetings for forty hours a week, ten weeks. Students will give a short oral presentation at the chemistry department group meeting and a poster on convocation day at the Celebration of Summer Scholars. Students will attend a day of safety training in May (to be scheduled by chemistry department, prior to start of research.)

Table: 25
PI(s): Agnes Southgate, Biology, College of Charleston
Email: southgatea@cofc.edu
Seeking # of students: 1
Desired start date: Fall 2016 or later
Time period of the project: minimum 1 year
Research Summary/Student Expectations:
Protein plasticity in response to evolution, tissue and envirnomental factors in insect flight muscles.