



THE 32ND ANNUAL

# CCSC Eastern Regional Conference

IN COOPERATION WITH ACM-SIGCSE AND  
FROSTBURG STATE UNIVERSITY

OCTOBER 28-29, 2016

GIRA CENTER, FROSTBURG STATE UNIVERSITY

*One University. A World of Experiences.*

# The 32ND Annual CCSC Eastern Conference

In Cooperation with ACM-SIGCSE

Frostburg State University

Frostburg, MD

Friday and Saturday, October 28-29, 2016

National Partners:



# Welcome to the CCSC Eastern 2016 Conference

On behalf of the CCSCE 2016 Conference Steering Committee we would like to extend a very warm welcome to those attending this 32<sup>nd</sup> Annual Conference at Frostburg State University in Frostburg, Maryland. Thank you to the educators from all levels of the computing sciences, including computer science, information systems, information technology, and so on, and the students in the related fields for attending the conference and contributing to the success of this Eastern Region Conference.

With the contributions from many of you, we have two days of excellent programs planned for professional enrichment of our audiences which include invited keynotes, paper presentations, workshops, tutorials, poster presentations, and a programming competition for the students. This year the conference had 28 professional paper submissions, out of which we have accepted 15 papers for an acceptance rate of 54%. All papers underwent a double-blind review process with on average papers were reviewed by 5.3 reviewers; all but two papers have 5 or more reviewers; one paper had 3 reviewers and another had 4 reviewers. Additionally, we have 5 tutorials, 4 workshops, 4 panels, many posters, and nifty ideas/lightning talk sessions.

The conference is extensively supported by the Computer Science & Information Technologies Department in the Liberal Arts & Sciences College of the Frostburg State University and many other universities' faculty members who served on the Conference Committee, as reviewers, etc. We want to express our sincere gratitude to all the parties involved in making this conference a reality. Special thanks to all those who helped develop the program: John Wright, CCSC Eastern Representative and overall guidance; Steve Kreutzer, the paper chair; Sandro Fouche, the poster chair; Dave Hovemeyer, organizing the programming competition; John Meinke for the proceedings; Vincent Cicirello for keynote coordination; George Benjamin, the Panels, Workshops, and Tutorials Chair; Andrew Mangle, nifty ideas and lightning talks; the judges for the poster awards; session chairs; and the student volunteers. Many thanks also goes to Frostburg State University administration for supporting us in hosting this conference, specifically but not limited to: Joe Hoffman, Dean College of Liberal Art and Sciences; Brad Rinard, Chair Computer Science and Information Technologies; Joni Smith, Graphic Artist in Publications.

We also appreciate the continuous effort and support from the CCSC Eastern Region Steering Committee and we are very grateful for the generous supports of the CCSC National Partners, Sponsors, and Vendors.

We wish you have a wonderful and fruitful conference!

Michael Flinn & David Zheng

Conference Co-Chairs, Frostburg State University

# The 32ND Annual CCSC Eastern Conference Program

Friday, October 28, 2016

## Concurrent Workshops

Time	Event	Location
9:10AM – 12:00PM	<b>Workshop</b> <ul style="list-style-type: none"><li>Getting Started With the Internet of Things <b>(Joel Rosiene, Carolyn Pe Rosiene)</b></li></ul>	Pre-Con A Gira Center Room 270
9:10AM – 12:00PM	<b>Workshop</b> <ul style="list-style-type: none"><li>Android Library for CS1 <b>(Ivaylo Ilinkin)</b></li></ul>	Pre-Con B Gira Center Room 279

## Walking Tours

Time	Event	Location
9:30AM	Tour #1: Showing our new Gira Center facilities	Starting at: Gira Center Main Lobby
10:30AM	Tour #2: Showing our new Gira Center facilities	Starting at: Gira Center Main Lobby

## Registration & Keynote

Time	Event	Location
8:30AM – 1:00PM	<b>Registration</b> <ul style="list-style-type: none"><li>Gira Center Main Lobby (including Friday late arrivals)</li></ul>	Gira Center Main Lobby
1:00PM – 1:15PM	<b>Welcome</b> <ul style="list-style-type: none"><li>Dr. Michael B. Flinn &amp; Dr. David Zheng, Co Chairs <i>Department of Computer Science &amp; Information Technologies, Frostburg State University</i></li><li>Dr. Joseph Hoffman <i>Dean, College of Liberal Arts and Science, Frostburg State University</i></li></ul>	Gira Center Room 397
1:15PM – 2:30PM	<b>Keynote</b> Presentation: <b>Jean Oh</b> , "Toward robots with cognitive abilities"	Gira Center Room 397
2:30PM – 3:00PM	<b>Coffee Break:</b> coffee /snacks provided	Gira Center Room 237

## Concurrent Session 1

Time	Event	Location
3:00PM – 4:15PM	<b>Paper Session – “STEAM”</b> <ul style="list-style-type: none"> <li>The Effectiveness Of Pairing Analog And Digital Games To Teach Computer Science Principles To Female Youth (<b>Stephanie Eordanidis, Carolee Stewart-Gardiner, Elisabeth Gee, Gail Carmichael</b>)</li> <li>Embedding Algorithm Pseudocode In Lyrics To Facilitate Recall And Promote Learning (<b>Ben Schreiber, John Dougherty</b>)</li> <li>Using Puzzles And Chases For Student Engagement In A Course For Non-Majors (<b>Scott McElfresh</b>)</li> </ul>	Session 1A Gira Center Room 156
3:00PM – 4:15PM	<b>Tutorial</b> <ul style="list-style-type: none"> <li>Using Github Pages For A Computer Science Course Website (<b>David Owen</b>)</li> </ul>	Session 1B Gira Center Room 270
3:00PM – 4:15PM	<b>Panel</b> <ul style="list-style-type: none"> <li>Millenials in Our Midst (<b>Donna M. Schaeffer, Cynthia Knott, and Charley Tichenor</b>)</li> </ul>	Session 1C Gira Center Room 277
3:00PM – 4:15PM	<b>Nifty Ideas &amp; Lightning Talks</b>	Session 1D Gira Center Room 279

## Concurrent Session 2

Time	Event	Location
4:30PM – 5:45PM	<b>Paper Session – “Student-driven education”</b> <ul style="list-style-type: none"> <li>A Json-Based Self-Advising System (<b>Giovanni Vincenti, Vanessa Bennett</b>)</li> <li>Improving Accuracy, Reliability And The Instructor’s Return On Investment In Peer-Grading Using Video Rubrics (<b>Shawn Lupoli</b>)</li> <li>Student Developed Computer Science Educational Tools As Software Engineering Course Projects (<b>Vincent A. Cicirello</b>)</li> </ul>	Session 2A Gira Center Room 156
4:30PM – 5:45PM	<b>Tutorial</b> <ul style="list-style-type: none"> <li>Web Based Programming Practice with Code Hunt (<b>Sandro Fouche, Andrew Mangle</b>)</li> </ul>	Session 2B Gira Center Room 270
4:30PM – 5:45PM	<b>Panel</b> <ul style="list-style-type: none"> <li>Recruiting, Retaining &amp; Completing As A Team (<b>Darlene Cross, Dorothy Carter, Jordania Donaldson, Quitin Oliver, Owen Klassmier</b>)</li> </ul>	Session 2C Gira Center Room 277
4:30PM – 5:45PM	<b>Nifty Ideas &amp; Lightning Talks</b>	Session 2D Gira Center Room 279

## Poster Session /Reception & Banquet

Time	Event	Location
5:45PM – 6:45PM	<b>Poster Session &amp; Reception</b>	Lane Center ARMAH Hall
6:45PM – 8:00PM	<b>Banquet</b> Presentation: <b>Kevin Nunley</b> , “Cybersecurity in the nation’s capital”	Lane Center ARMAH Hall
6:45PM – 8:00PM	<b>Pizza Party</b> • for Students not joining the Banquet	Gira Center Room 397

**Saturday, October 29, 2016**

## Registration / Breakfast & Programming Competition

Time	Event	Location
7:30AM – 8:30AM	<b>Registration and Continental Breakfast</b> • for both programming competition registration and late conference registration	Gira Center Room 237
8:30AM – 1:30PM	<b>Programming Competition</b>	Gira Center Room 235

## Concurrent Session 3

Time	Event	Location
8:30AM – 9:45AM	<b>Paper Session – “Alternative approach”</b> • Using the Game Boy Advance to Teach Computer Systems and Architecture ( <b>Ian Finlayson</b> ) • Drones in the Classroom ( <b>Donna Schaeffer, Patrick Olson</b> ) • Virtual-Machine-Based Network Exercises For Introductory Computer Networking Courses ( <b>Robert Montante</b> )	Session 3A Gira Center Room 156
8:30AM – 9:45AM	<b>Tutorial</b> • Drama as a Computer Science Teaching Tool ( <b>Karen Anewalt</b> )	Session 3B Gira Center Room 270
8:30AM – 9:45AM	<b>Tutorial</b> • How to Turn The Weather Channel, Dilbert, and Jurassic World into Computing Course Assignments ( <b>Karla Carter</b> )	Session 3C Gira Center Room 277
8:30AM – 9:45AM	<b>Workshop</b> • Using Java Lejos To Teach Robotics To Java Programmers ( <b>Susan Ceklosky</b> ) Part I: Continues after break in Session 4	Session 3D Gira Center Room 279

## Break / Vendors

Time	Event	Location
9:45AM – 10:15AM	<b>Coffee Break:</b> light refreshments provided	Gira Center Room 237

## Concurrent Session 4

Time	Event	Location
10:15AM – 11:30AM	<b>Paper Session – “Curriculum”</b> <ul style="list-style-type: none"><li>Resources For Integrating Computer Vision Into The Computer Science Curriculum <b>(Susan H. Strayer)</b></li><li>A Project-Based Curriculum For Algorithm Design And NP-Completeness Centered On The Sudoku Problem <b>(Andrea Lobo, Ganesh Baliga)</b></li><li>Pushing Git &amp; Github In Undergraduate Computer Science Classes <b>(Esmail Bonakdarian)</b></li></ul>	Session 4A Gira Center Room 156
10:15AM – 11:30AM	<b>Tutorial</b> <ul style="list-style-type: none"><li>Running a Programming Contest <b>(Steven Kennedy)</b></li></ul>	Session 4B Gira Center Room 270
10:15AM – 11:30AM	<b>Workshop</b> <ul style="list-style-type: none"><li>Pi for All - Embedding Embedded Computing <b>(Andrew Mangle, Sandro Fouche)</b> Part I: Continues after break in Session 5</li></ul>	Session 4C Gira Center Room 277
10:15AM – 11:30AM	<b>Workshop</b> <ul style="list-style-type: none"><li>Using Java Lejos To Teach Robotics To Java Programmers <b>(Susan Ceklosky)</b> Part II: Continued from Session 3</li></ul>	Session 4D Gira Center Room 279

## Break / Vendors

Time	Event	Location
11:30AM – 12:00PM	<b>Coffee Break:</b> light refreshments provided	Gira Center Room 237

## Concurrent Session 5

Time	Event	Location
12:00PM – 1:15PM	<b>Paper Session – “Novice programmers”</b> <ul style="list-style-type: none"> <li>Computational Thinking: What Does It Really Mean For The K-16 Computer Science Education Community (<b>Arthur Hoskey, Sen Zhang</b>)</li> <li>Metrics For Timely Assessment Of Novice Programmers (<b>Jonathan P. Munson</b>)</li> <li>Precursor Skills To Writing Code (<b>Laura Zavala, Benito Mendoza</b>)</li> </ul>	<b>Session 5A</b> <b>Gira Center</b> <b>Room 156</b>
12:00PM – 1:15PM	<b>Panel</b> <ul style="list-style-type: none"> <li>Providing feedback to Students in Online Classes (<b>Susan Conrad, Donna Schaeffer, Rita Thomas, Patrick Olson</b>)</li> </ul>	<b>Session 5B</b> <b>Gira Center</b> <b>Room 270</b>
12:00PM – 1:15PM	<b>Workshop</b> <ul style="list-style-type: none"> <li>Pi for All - Embedding Embedded Computing (<b>Andrew Mangle, Sandro Fouche</b>)</li> <li>Part II: Continued from Session 4</li> </ul>	<b>Session 5C</b> <b>Gira Center</b> <b>Room 277</b>
12:00PM – 1:15PM	<b>Panel</b> <ul style="list-style-type: none"> <li>A Comparative Analysis of Academic Dishonestly in Online Classes: An assessment of Student and Faculty Perceptions (<b>Adnan A. Chawdhry, Karen Paulet, David M. Douglas, Jamie Pinchot</b>)</li> </ul>	<b>Session 5D</b> <b>Gira Center</b> <b>Room 279</b>

## Lunch & Awards

Time	Event	Location
1:15PM – 2:30PM	<b>Luncheon and Awards</b> <ul style="list-style-type: none"> <li>Luncheon included in both regular and student registration, as well as for programming teams.</li> <li>Awards for paper and poster sessions.</li> <li>Awards for programming competition.</li> </ul>	<b>Lane Center</b> <b>ARMAH Hall</b>

## Steering Committee Meeting for 2017

Time	Event	Location
2:30PM – 3:30PM	<b>Steering Committee Meeting for 2017</b> <ul style="list-style-type: none"> <li>All who are interested in helping organize next year's conference are invited.</li> </ul>	<b>Gira Center</b> <b>Room 237</b>

# **Keynote Speaker**

**Dr. Jean Oh** is a Project Scientist of the Robotics Institute at Carnegie Mellon University and has 20 years of experience in intelligent systems and robotics research. She leads projects in various areas of AI in robotics including autonomy, language understanding, multimodal perception, path planning, and machine learning. Most recently, she has been leading the perception and the learning tasks for the DARPA Aircrew-Labor In-Cockpit Automation System (ALIAS) program that aims to automate cockpits with rich semantic understanding of pilot missions, reading cockpit instruments and pilot activities, and acquiring knowledge through learning from observing experienced pilots. Dr. Oh is also a PI on the intelligence architecture subtask of the ARL RCTA program where her team's work on language understanding on robot navigation won the Best Cognitive Robotics Paper Award at the IEEE International Conference on Robotics and Automation (ICRA) in 2015.

## **Presentation Topic : Toward robots with cognitive abilities**

Abstract: As robots become commonplace in a variety of domains including manufacturing, autonomous vehicles, and the military, there has been growing interest in the development of intelligent robots that can support humans not only as tools, but also as teammates. To be a competent teammate, a robot needs to have basic cognitive abilities including perceiving the semantics of its environment, reasoning about spatial relationships, and communicating with natural language. In this talk, I will use a few specific applications including semantic navigation to illustrate various technical challenges and the lessons learned in developing autonomous robots that can work with humans.

## Banquet Speaker

**Kevin Nunley** is from The Washington Center. The Washington Center for Internships and Academic Seminars is an independent, nonprofit organization serving hundreds of colleges and universities in the United States and other countries by providing selected students challenging opportunities to work and learn in Washington, D.C. for academic credit. The largest program of its kind, The Washington Center has 70 full-time staff and more than 50,000 alumni, many of whom are in leadership positions in the public, private, and nonprofit sectors. The Washington Center knows that experience transforms and that immersive experiences can and will catapult participants into higher impact opportunities within their chosen professional fields. Leaders are built from the inside out. They are made, not born. The Washington Center's program advisors and internship site supervisors work tirelessly to ensure that students get the most out of their internship experience.

The Washington Center believes it is a fundamental civic duty to instill in all program participants the need to be well-informed, public-spirited and socially engaged leaders. TWC's alumni hold leadership positions in virtually every career field, including law, education, social work, medicine, journalism, diplomacy, business and politics. Several even serve on TWC's Board of Directors.

At TWC, Kevin Nunley serves as the Vice President of Student Affairs. In this role, he has oversight of the entire student experience during their time in Washington, DC. Kevin oversees three functional areas of the institution: Academic Internship Programs, Student Services & Community Life, and the Academic Seminars Department. This includes the curriculum that guides their transition from theory to practice, their professional development and growth within their internship sites, their experience in our living and learning environment, and more. Additionally, he plays a lead role in The Washington Center's Emergency Protocols and Response team.

Within the Academic Seminars division, Kevin is responsible for the development and implementation of TWC's shorter term, high impact programs such as Cyber Security 2017, Inside Washington, National Conventions, Career Mastery and others.

Prior to joining TWC, Kevin worked at several colleges and universities in higher education, student affairs, wellness, and teaching with roles in residential life, counseling, wellness, diversity and inclusion.

In the DC Community, Kevin serves as the Chairperson for the Board of Directors with Metro DC PFLAG, a group facilitator at Whitman Walker Clinic, and a spokesman for Diversity topics with the DC Center as well as an independent consultant for Diversity and Inclusion topics.

His academic background includes three Bachelor of Science degrees in Chemistry, Biology, and Pre-Medical Sciences as well as a Master of Science in Biomedical Research with concentrations in Neurology and Teratology.

## **Presentation Topic: Cybersecurity in the nation's capital**

Abstract: Cyberspace and its underlying infrastructure are vulnerable to a wide range of risks stemming from both physical and cyber threats and hazards. New opportunities for understanding the challenges emerge every day. Join The Washington Center in May for an immersive, academic week surrounding the current issues that impact cybersecurity during which faculty and students will have the opportunity to take a deep dive and explore the topic with subject matter experts in the field, DC-centric site visits, and the potential career opportunities that may exist for students.

# Paper, Workshop, Tutorial, Panel, and Poster Abstracts

## Papers

Papers can be found in the conference proceedings.

## Workshops

### Getting Started With the Internet of Things

(**Joel Rosiene, Carolyn Pe Rosiene**)

Abstract: With the continued adoption of IPv6 and as cost of computing, sensing, and communication drops toward zero, the Internet of Things (IoT) promises to change how people interact with computers. It is likely that intelligent agents will be embedded in everything from light bulbs to packaging and will actively track, react and anticipate the information/computing needs of the unsuspecting human. The workshop is presented in three parts. In the first part, the definition and overview of low cost options for development of Internet of Things (IoT) will be presented. In the second part, attendees will be guided through the configuration of an IoT development system using an Android phone and the IBM Blue Mix platform (or equivalent). In the third part, we will demonstrate the implementation in standalone devices (Mbed and Raspberry PI) and attendees will have a chance to develop their own application.

### Using Java LeJOS To Teach Robotics To Java Programmers

(**Susan Ceklosky**)

Abstract: The Java leJOS platform allows robotics applications to be written in Java and then run on a LEGO Mindstorms robot. It provides an Eclipse plug-in, so all of the applications may be written and compiled using Eclipse. It offers PC tools to upload compiled applications to the robot and communicate with the robot using either Bluetooth or Wi-Fi. It has a full API with classes and interfaces for controlling the robot's motors, reading samples provided by the robot's sensors, displaying data to the robot, navigating the robot, and more. It is available for Windows, Linux, and Macintosh.

### Android Library for CS1

(**Ivaylo Ilinkin**)

Abstract: This workshop will introduce an Android library designed for a traditional CS1 course. No knowledge of Android and event-driven programming is required to use the library. The participants will build apps that range from apps suitable for the first week of the semester to simple board games that incorporate advanced programming constructs. The workshop will include a discussion on integrating the Android library with popular CS1 IDEs including DrJava, BlueJ, and jGRASP. The workshop may be of interest to instructors who favor the objects-late approach. More information at <http://www.cs.gettysburg.edu/~ilinkin/cs1android>.

### Pi for All - Embedding Embedded Computing

(**Andrew Mangle, Sandro Fouche**)

Abstract: The workshop will introduce Raspberry Pis as supplemental classroom resources that are applicable in a breadth of computer sciences courses. Participants will learn about the Pi, attempt classroom exercises, and be able to understand how embedded computing can enhance existing curriculum. The low-cost, high-powered, Linux-based, and highly capable Pi's have been beneficial in engaging students, encouraging collaboration, and fostering innovation. Emphasis will be placed on the incorporation of embedded computing into the classroom using examples from an OS Security, Web Fundamentals, System Administration, and Network Fundamentals courses. Participants will be provided the necessary materials to experience the Raspberry Pi. Additional discussions will include lessons learned and best practices for using the Pi in the classroom.

## Tutorials

### Using Github Pages For A Computer Science Course Website

(**David Owen**)

Abstract: GitHub's Pages feature (<https://pages.github.com>) might be a convenient way for you to create and manage a website for your course, especially if you are already familiar with GitHub. In this presentation I'll share from my experience creating a site for a course in 3D Computer Graphics programming. It was important to me that code examples in several languages (Javascript, HTML, CSS and the OpenGL Shading Language) be easy to include and be rendered with syntax highlighting. I wanted good looking mathematical notation, preferably generated from LaTeX input syntax, since that's the format of notes I'd prepared for teaching the course in the past. And I wanted things like lesson and exercise numbers to be generated automatically, so that I could add content in the middle without needing to update everything from that point on.

In the tutorial part of this presentation, I'll show you how to create a new GitHub Pages site, and how to set up a local version of the site using Jekyll (<https://jekyllrb.com/>), so that you can test changes before uploading them to the live version of your site on GitHub. We'll look at Markdown (<https://daringfireball.net/projects/markdown/>), the simple input language used to create content for the site, and see that it's easy to add source code examples that will be rendered as HTML with syntax highlighting. Mathjax (<https://www.mathjax.org/>) will be used to generate good looking mathematical notation from LaTeX-style input embedded in a Markdown source file. Liquid Tags (<https://github.com/Shopify/liquid/wiki>) will be used within a Markdown or HTML template to support automatically generated content (links to a set of pages, for example).

To participate in the tutorial part of the presentation, you'll need a laptop and a GitHub account. If you would like to set up a local version of your GitHub Pages site, you'll find links and instructions for downloading and installing the necessary software on my website (<http://home.messiah.edu/~owen/ccsc/>).

### Web Based Programming Practice with Code Hunt

(**Sandro Fouché, Andrew Mangle**)

Abstract: Our proposed tutorial introduces the Code Hunt platform and provides an introduction to creating a custom Code Hunt level. Intended for introductory programming students, Code Hunt is a gamified, web-based, educational coding platform from Microsoft. While existing levels contain C\# exercises, the platform allows for the creation of custom levels in Java or C\#. Participants will be introduced to Code Hunt and given the opportunity to create a simple custom level, experience the automated testing and grading engine. Further discussion will focus on integrating Code Hunt to existing curricula.

### Drama as a Computer Science Teaching Tool

(**Karen Anewalt**)

Abstract: Teaching students is challenging. As educators, we strive to help students to understand and apply important concepts from our courses. Active learning activities are often enjoyable to students and have been found to enhance student learning. Including a novel, kinesthetic activity can help to engage students and assist them in remembering and applying key concepts.

This tutorial will feature a dramatic play designed to teach students about functions, arguments, and return values using three characters: a princess, a knight, and a monster. The characters represent the end user, the function, and the main program. Student volunteers with minimal preparation and a few fun props can perform the play during a typical class session, while still providing time for reflection after the content and/or delivery of a brief preparatory lecture before the play. Rather than completely replacing lecture content, the performance can be a memorable diversion from traditional lectures, while providing memory

hooks for students to retain the content long term. Workshop participants will receive the full-script to use in their own courses.

This tutorial will be interactive. Groups of participants will be challenged to create a short dramatic play that could be used to illustrate other concepts often taught in CS0 or CS1 such as logical operators, repetition statements, value and reference parameters, class design, or other topics of interest.

### **How to Turn The Weather Channel, Dilbert, and Jurassic World into Computing Course**

#### **Assignments**

#### **(Karla Carter)**

Abstract: The reality for many students getting computing degrees is a job in the business sector, where they must apply their skills to real-world scenarios. In order to fulfill my school's motto of "Real Learning for Real Life" in creating assignments for my CIS and MIS classes (many of which are online and require written discussion prompts) I take inspiration from real-world events and corporate horror stories...but also from fiction with AI run amok and movies about dinosaur theme parks - because there is no reason you can't have fun while pondering technology-related tasks. This tutorial will be a hands-on exploration into crafting engaging, relevant, and memorable assignments - and includes bonus material on encouraging Devil's Advocate thinking!

### **Running a Programming Contest**

#### **(Steven Kennedy)**

Abstract: Workshop Purpose: The aim of this workshop is to hold a roundtable discussion on running a student programming contest, including available tools, problem selection, and incentivizing participation.

Workshop Description: Frostburg State University recently held their first programming contest as a way to encourage students to have fun with their education. An overall success, we'll use this experience to begin a discussion on different approaches to begin this as an activity and to share ideas. We'll compare successes and failures and how we can take what we've learned to administering new contests. We will compare different contest tools and share strategies on how to use them for the best results, and finally, we will discuss different ways to get students interested in participation.

## Panels

### **Millennials in Our Midst**

**(Donna M. Schaeffer, Cynthia Knott, and Charley Tichenor)**

Abstract: We plan to facilitate a conversation about what a millennial is and what different generations may have in common. Some ideas about millennials:

Millennials like to chase ‘bright, shiny objects’, in a school/work context and outside it. How do we motivate a millennial to participate, how do we help to retain and develop them within the University?

Millennials are known by some as the ‘trophy’ generation, where they are used to being winners. When reality hits in the University context, and they are no longer winning at everything, or winning because they show their best efforts. This takes some getting-used-to for them. How do we sandwich criticism and help them embrace feedback as learning opportunities while continuing to stroke their egos?

Millennials creatively problem solve collaboratively with others. They want to know the why of things, and want to see the metrics and the data. We need to avoid telling them what to do and how to do it. How do we best design class assignments? How do we convey relevance and impact?

Millennials love technology and devices, and communicate and connect differently than those of other generations. So accept that they communicate differently, but how do we help them do what they do in a professional manner? When a millennials’ love-of-devices makes them appear unfocused and un-engaged in the classroom, how do we help them understand how he/she is coming across and to make different choices?

Millennials may be more experienced and less fearful of trying new things, especially around technology, so we need to use this to our advantage. They also have an entrepreneurial streak. Millennials love to continuously learn and grow. So, how do we challenge them?

Millennials tell it the way it is – they are clear and transparent and direct in general. This is great, but how do we provide lessons in strategy or tact, so they learn to be respectful?

### **Recruiting, Retaining & Completing As A Team**

**(Darlene Cross, Dorothy Carter, Jordania Donaldson, Quitin Oliver, Owen Klassmier)**

Abstract: It has been said that students are their own best resource. This session will show how to engage students so that they will engage themselves. When students are teamed, they become responsible for one another and provide one another with incentive to succeed. This session is about student success via team building.

### **A Comparative Analysis of Academic Dishonesty in Online Classes: An assessment of Student and Faculty Perceptions**

**(Adnan A. Chawdhry, Karen Paulet, David M. Douglas, Jamie Pinchot)**

Abstract: Due to the demand for distance learning, universities and colleges are offering more online classes to accommodate this growing trend. With this shift in education, it is important to understand the students’ and faculty perceptions of what constitutes cheating and unethical behavior in online classes. This exploratory study of 457 undergraduate students and 75 faculty members will assess what methods students are utilizing to complete course work and which of these methods is considered academically dishonest by faculty. This study seeks to understand the gaps that exist between these two groups to help establish a clear set of guidelines of permissible techniques for completing coursework based upon faculty and student perceptions.

## **Providing feedback to Students in Online Classes**

**(Susan Conrad, Donna Schaeffer, Rita Thomas, Patrick Olson)**

Abstract: This session will be a panel discussion consisting of faculty to discuss what technologies and educational strategies are most effective for providing feedback to students in both online and face-to-face classes. The panel will discuss the different types of feedback professors provide students, student perceptions of feedback, technology preferences and acceptable timeframes for receiving feedback based upon the student activity. It will address the differences between providing feedback in a face-to-face class and an online class. The panel will discuss the content of feedback messages to students and its helpfulness to learning.

## **Poster**

### **Comparing Password Creation Alternatives: Prompting, Automating, and Generating**

**(Andrew Mangle, Jenna Kingsbury)**

**Abstract:** Passwords are a common authentication scheme that are found throughout computer-based systems. Effective passwords should be both memorable and secure to ensure the confidentiality and integrity of user's information. In an effort to assist users in the creation of passwords, we tested individual, system, and gamified password generators. The participants were asked to generate a password. Next, the users were provided a system generated password. Lastly, the third password was generated on a phrase template word game. Consequently, the latter generated passwords provided the user something to associate with the password in attempt to create an improved solution over the individual and system generated password. We tested this process on a small sample and found the system and gamified password generators had a significant negative impact on memorability.

### **Marketing computer science by way of a hands-on problem solving exercise to show the essence of computer science**

**(Robin Snyder)**

**Abstract:** Many high school or college students who are potential computer science majors may have little to no idea of the essence of computer science. Their experience may be limited to using a computer, laptop, smart phone, etc. Thus, some informative marketing can help such students decide to learn more about computer science. This paper provides some ideas that have been used by the author to present a brief but informative and somewhat non-technical introduction to the essence of computer science to high school students going to college, to college students in the fundamental computer literacy course, and to business information systems and computer science minors and majors in the beginning computer programming course. Some aspects include the use of a physical model of the Towers of Hanoi problem as a hands-on problem solving exercise, the impossibility of testing a program to insure that it is correct, a brief non-technical introduction to both program correctness and proving programs correct and intractable and undecidable problems, and a definition of computer science a search for finite representations of infinite (or potentially infinite) objects in time and space.

### **On the Development of Networking and Information Security Degree Programs in a Four Year University**

**(Weidong Liao, Osman Guzide)**

**Abstract:** Computer and network security has gained increasing popularity during the past two decades. As more and more business practices and governmental services became accessible on the Internet and Web, the threat and concerns of security have also grown. The recent development of IT areas such as social networks, cloud and mobile computing and services, has created more demand in qualified IT personnel in the area of computer and networking security.

Shepherd University is located at the four state area in the northwest of Washington DC. With its easy access to federal agencies such as Coastal Guard, IRS, FBI and NSA, the demand of students and graduates with solid knowledge and skills in computer and network security grows year by year. Our students have been hired as student interns by local government agencies every semester. Our recent graduates have found jobs in FBI, CIA, NSA, Coastal Guard and IRS, etc.. It has been an imperative choice for us to develop a degree program or programs in the area of computer, network and information security.

In this poster, we describe our experience in developing and implementing security and networking degree programs at a small four year institution setting. Motivation for developing these programs and development of security related courses is discussed. We then introduce security courses as part of our security curriculum development. Also presented in this poster are our laboratory settings for networking and security program and ethical hacking student club. We will present our security-focused fields of study

as very active and successful ones, not only for students in these two programs, but also for students in their computing areas.

### **Personal Mobile Device Policies and the Military: Does Anyone Know the Rules? (Justin Fruehauf)**

**Abstract:** Smartphone technologies have revolutionized almost every facet of life. The ability to use these devices as multi-faceted technological platforms makes them both beneficial tools for individuals as well as dangerous weapons to compromise information security systems. Through the use of mobile applications (both installed by the device owner and those downloaded unwittingly) smartphones are capable of streaming and recording video and audio, scanning for and recording the existence of other devices and electronically stored information, and providing global positioning coordinates. The ability of smartphone technologies to penetrate and disclose sensitive information warrants the creation and implementation of employee smartphone use policies for any organization but especially for the military. Such policies must account not only for smartphones issued and maintained by military branches, but also personal smartphones owned by employees. These policies must govern not only the issue of where smartphones are allowed, but also what applications should be allowed on the device. This is imperative even in instances where personal smartphones are not used for work purposes, but are carried and used by employees while onsite. Research indicates that the creation and maintenance of personal smart device policies are the responsibility of each military installation. Unfortunately, research indicates that, if personal smartphone policies exist at all, their dissemination, and thus employee education, is lacking. A sampling of policies shows that most policies are not only outdated, but fail to cover personal devices. The purpose of this research is to collect and analyze a sampling of smartphone policies for every branch of the military as well as to evaluate the extent to which these policies are publicized to military personnel. The research is intended to help identify the strengths and weakness of not only the policies, but also the education of military personnel regarding the policies.

### **NSF Funded Mobile Forensics Security Project (Karen Paullet, Jamie Pinchot)**

**Abstract:** Mobile phones have become an ever-present part of our society bringing to the forefront increasing concerns related to security. Mobile devices are being used to commit crimes and are becoming a target to gain user information for harmful intentions. Mobile security remains a top concern to businesses. The project advances both knowledge and education in the field of mobile cybersecurity and cyber forensics by creating an online Mobile Forensics and Security (MFS) certificate program and developing and implementing a train-the-trainer program for Computer Information Systems faculty. This will increase Robert Morris University's capacity to train MFS specialists and the capacity of other institutions to offer programs in this area once their faculty has been trained.

The project will provide the MFS train-the-trainer program through onsite and online training programs using Blackboard and VMWare to 20 faculty members by the end of the grant period, and annually thereafter and offer an online certificate program in Mobile Forensics and Security by Fall 2016. The certificate program will be combined with hands on internships that will equip students with the skills needed to secure a mobile environment. Through partnerships with Middle Georgia State College and Southeastern Advanced Cybersecurity Education Consortium that serve a large number of African American students and rural students, the project will expand training and certificate course offerings for these underrepresented groups. As a result of the project, by 2018-2019, at least 20 additional faculty members will be trained and fully equipped to teach mobile forensics. They, in turn, will be able to train others on their campuses and potentially impact thousands of students trained in mobile security, thereby improving cybersecurity in a variety of U.S. industry sectors and government.

### **Enhancing Computing Curricula through a Robotics-based Approach (Weidong Liao, Reza Mirdamadi)**

**Abstract:** The current computing curricula for the first two years is mostly comprised of foundation

courses in mathematics and introductory computing courses that lack of the characteristics of real world applications, hands-on projects and teamwork. While a solid foundation in mathematics and computing concepts is critical for studying advanced computing courses, it makes computing majors less appealing and is one of the major obstacles in retaining and recruiting students in computing majors. In this poster, we present our robotics-based solution that incorporates tangible projects and team learning in computing curricula to promote recruitment and retention.

The primary component of our robotics based solution is a series of robotics- oriented courses. Three courses have been developed or being developed in a sequence. The first one, FYEX 102: Robots-Bits and Bolts, is a first year experience. Students in this class will learn about robots and how to build simple robots. The other two courses are ENGR 300-Introduction to Robotics and ENGR 350-Robotics Seminar. In these two classes, students earn about the basics of modeling, designing and programming robots. They will form teams to build and work with more sophisticated robots that can perform multiple and complicated tasks with high technological precision functions and different sensing modalities.

Our robotics based approach motivates students to study a variety of computing concepts and gain knowledge and skills in hardware, software and communication networks such as sensors, sensor networks, robotics APIs, and programming. Students also get chance to explore how computing knowledge and skills can be utilized in practical robotics projects and applications, and learn the importance of teamwork and communication. This is especially important in recruiting and retaining students from underrepresented groups, such as female and minority students, because studies have shown [2] that the concept of real world applications and teamwork appeals to female students.

### **Summary Of Prerequisites For Undergraduate Instruction In Parallel And Distributed Systems (Stanley Jointer II)**

**Abstract:** On multiple levels, parallel and distributed computing has arrived and is available in nearly every computational system available to the general public, including nearly all desktop computers, most handheld and laptop computers, mid- and high-end graphics cards, and the majority of cellular “smartphones”. Beyond this, advertisements for cloud computing solutions are equally ubiquitous and target developers and corporate decision-makers. What the current computing environment lacks, however, is software that is aware of and utilizes the multiple core processors, or multiple networked computers, to the fullest advantage. In order for these types of software to become more prevalent, undergraduates of computer science programs should be educated in parallel and distributed theories, system designs, and software development. In order for the material to be taught effectively, students, or at least undergraduate instructors, should have some exposure to the underlying topics that surround parallel and distributed systems.

The primary prerequisite for studying parallel and distributed design and development is a course in computer architecture, where a number of concepts are important for undergraduate study. First, pipelining of instructions and memory hierarchy on a general purpose processor (GPP). Next, the relation between the processor and the operating system when a sub-part of a program, referred to as a task or a job, takes a lengthy amount of time to complete, causing the operating system to issue a context switch to a task that is ready for the processor's time. Lastly, the organization and operation of computer networks, and the similarity between network and pipeline throughput. How data moves through a network is another topic that students and professors should have some familiarity with.

### **Teaching Simulation During A Summer Science Research Program (Jennifer A. Polack, Mary Clark, John Evan May)**

**Abstract:** This poster describes a summer simulation research project for undergraduates in a computer science program. The University of Mary Washington’s Summer Science Institute is a program that offers UMW science majors an opportunity to participate in a summer-long research project supervised by a faculty member. Based on topic of interest by this particular faculty member, students formulated a research direction, weighed the pros and cons of different simulation methodologies, designed and

implemented a simulation, analyzed the results and presented finding at a one day symposium. The faculty sponsor offered the students a semi-structure and support but an important feature of the summer research was that students were in control of their own research.

During the ten weeks summer session the students are expected to put in a 40-hour workweek. In the first week, students were extensively prepared for their research projects in two ways. The first involved learning the details about simulations by reading and researching current literature; this provided students the basic knowledge and current research techniques for their project. The second involved daily meetings with the sponsoring faculty member to discuss the research problem and four meeting with another faculty mentor who had a specialty in networking and Wireshark which would be used in the simulation data gathering stage of the research. The daily meetings were approximately 30 – 60 minutes each day.

During the following nine weeks, students participated in weekly group meetings (with all summer science participants and faculty mentors), to report on their progress, brainstorm with one another, and test their hypothesis. In order to improve their oral and writing presentation skills, the students had to give two informal presentations to a subset of the student participants and faculty mentors during the weekly group meetings, present either a final poster or oral presentation during the one day symposium and submit a final report that was published in the one day symposium proceedings. Weekly simulation topics included the following: Problem Formation, Data Collection & Analysis, Using Network Traffic in Simulation Model & Wireshark (Data Collection of Packet Data), Model Development, Model Experimentation, Analysis.

### **A New Hybrid Security Program for Securing Automobile Networks (Syed Rizvi, Jonathan Willett)**

**Abstract:** Consumers like to believe that, when they are driving an automobile, that their operation of it is purely a relationship between them and the car's mechanical components. Their belief is becoming less and less a reality. Increasingly, automobile manufacturers have been incorporating more and more technology into cars. The new innovations meant to add safety and convenience into our lives, but at a cost. In this case, added features also mean added risk. Over the last decade, hackers have been taking advantage of automation of certain features to take control of a consumer's vehicle. These vulnerabilities come, more specifically, as a result of integrated systems. Certain wireless functions were integrated with mechanical functions. Therefore, creating a weak spot that others could exploit. Thus creating a plethora of both immediate and gradual consequences. Once again, they were meant to further expediency but created a vulnerability. In this paper we will discuss car network vulnerabilities, threats, and potential consequences. The ultimate goal of this research is to create and implement a security program architecture that will further protect a car's network and modules from being compromised by hackers through manipulation of packets. Not only with respect to traditional vehicles, but especially in hybrid and electric cars. Thus, taking a step closer to a fully green planet. Various automotive manufacturers have created solutions. For example, Ford has created whitelists and firewalls. Our proposed solution/idea deviates from what Ford and other manufacturers are doing because our solution is "program" based. These programs (Hybrid Security Program or HSP) can work with the firewalls and whitelists yet be independent from the systems. If one layer fails, such as the firewalls and whitelists, the "Hybrid Security System" will be the next line of defense preventing the compromise of a bus and/or module.

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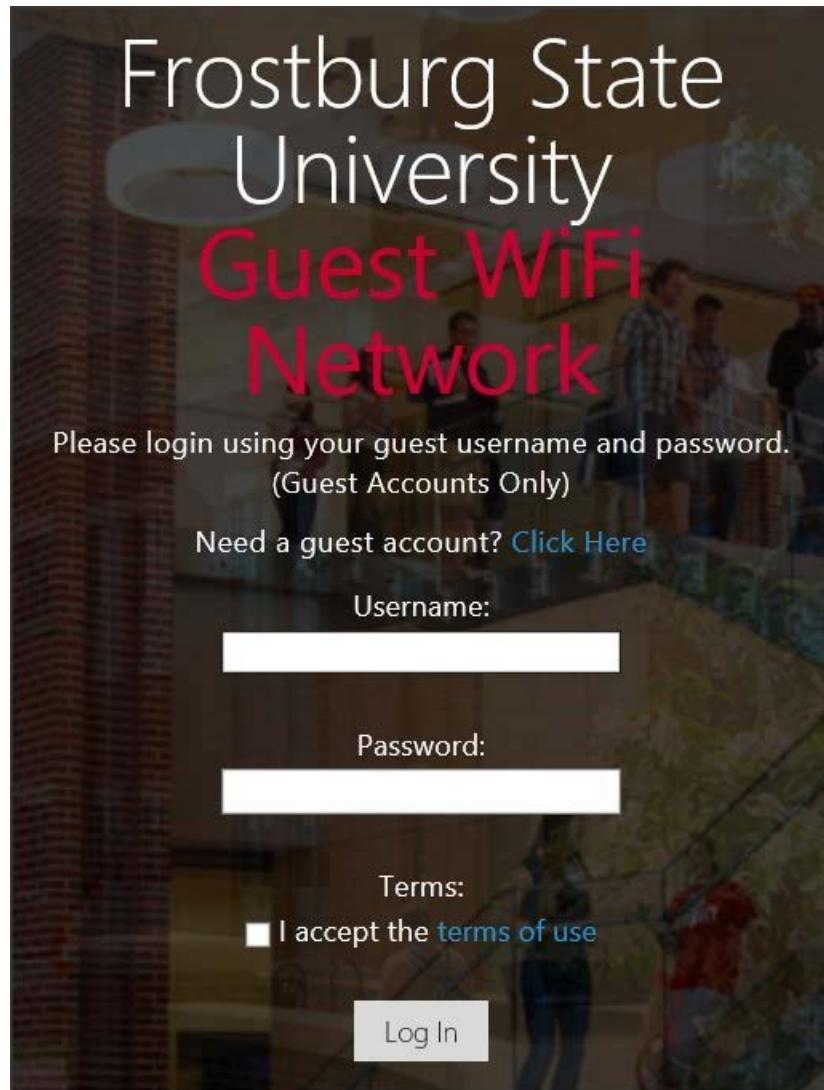
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# Guest Wi-Fi at FSU

## Self-Registration

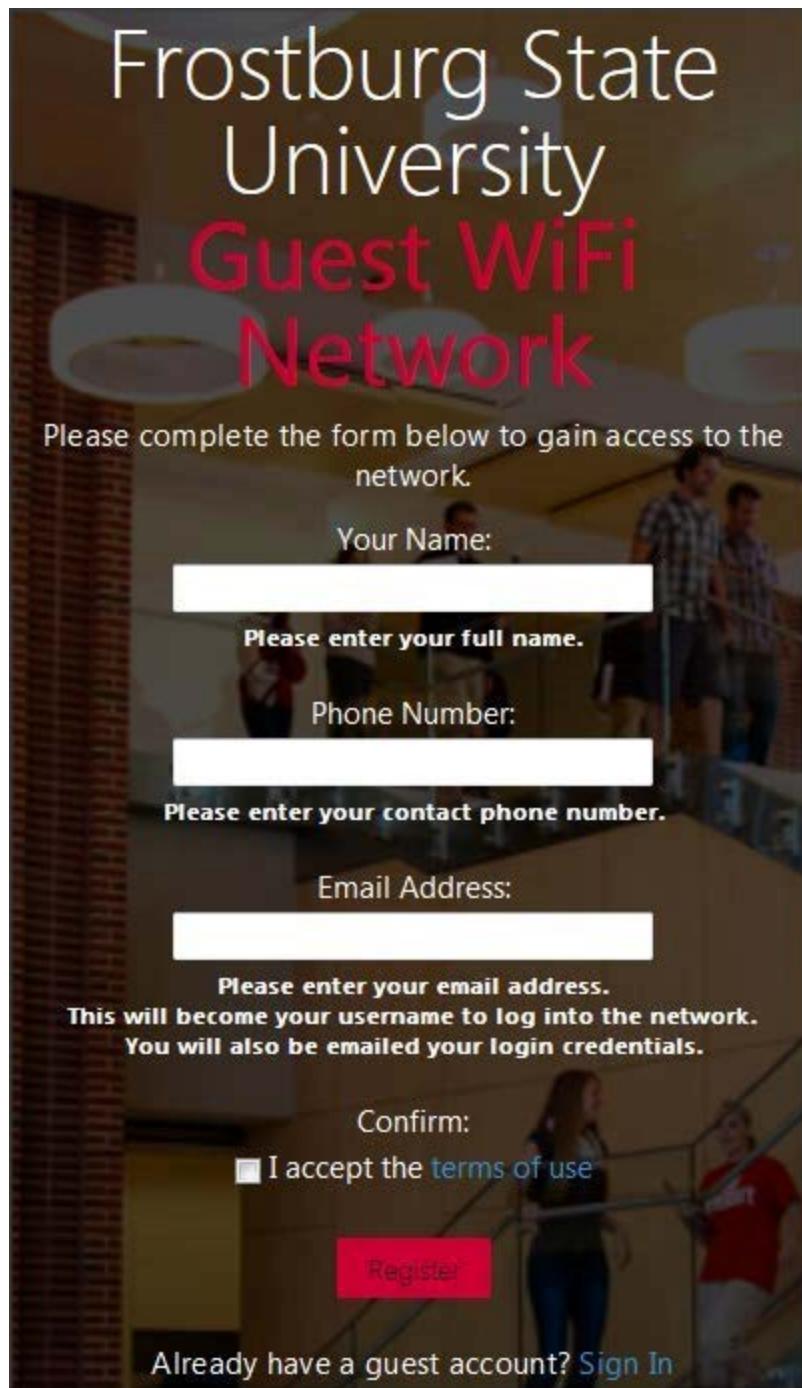
To connect to the guest Wi-Fi at Frostburg State University, simply connect your Wi-Fi device to guest@FSU and open a web browser.

You will be redirected to the following web page:



Click on the link “Need a guest account? Click Here” at the middle of the page.

This will bring up the self-registration page shown below:



The image shows a mobile device displaying a guest WiFi registration form for Frostburg State University. The background of the form features a photograph of students walking down a hallway.

**Frostburg State University**  
**Guest WiFi Network**

Please complete the form below to gain access to the network.

Your Name:

**Please enter your full name.**

Phone Number:

**Please enter your contact phone number.**

Email Address:

**Please enter your email address.**  
**This will become your username to log into the network.**  
**You will also be emailed your login credentials.**

Confirm:

I accept the [terms of use](#)

**Register**

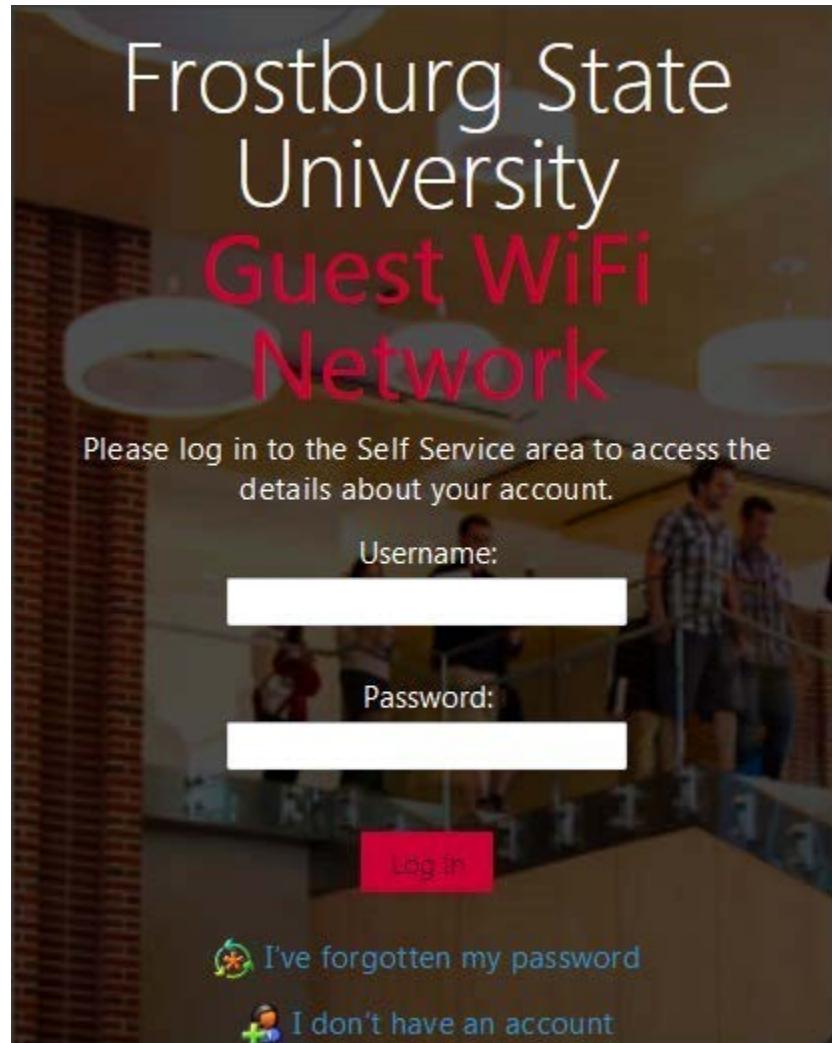
**Already have a guest account? [Sign In](#)**

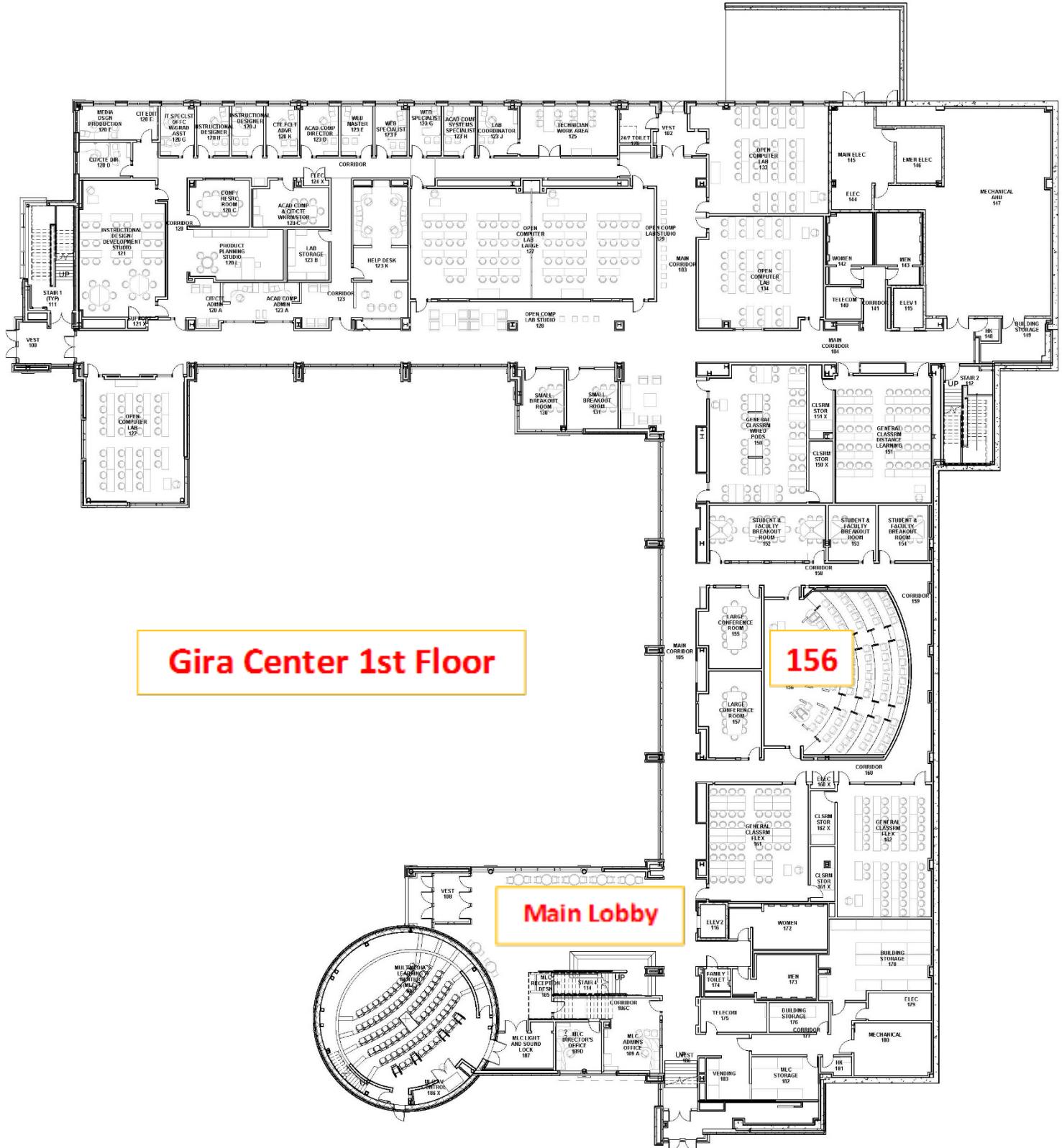
Enter your information, click that you accept the term and then click 'Register'

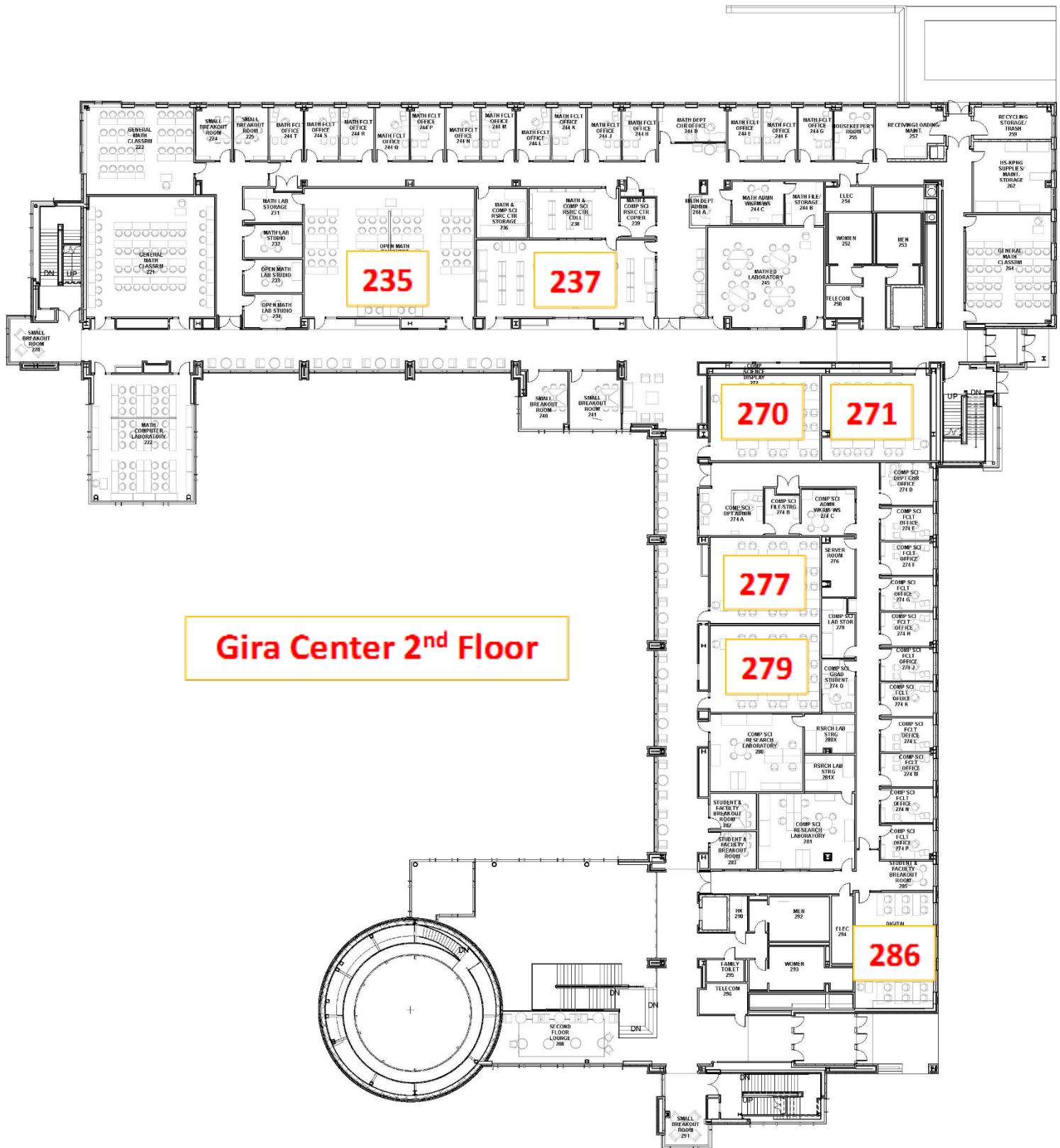
Returned to you will be your username and auto generated password. Your login information will also be emailed to the email address you entered during registration.

You may now login in using the presented credentials. Your account will remain active for at least 24 hours at which time you will need to re-register.

Once you have an account you may use those credentials to login if you are ever presented the page below.









# Welcome to FROSTBURG STATE UNIVERSITY



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President .....	Hitchins
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Student & University Billing .....	Pullen
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