

Spring 2022 Undergraduate Research Cybersecurity Workshop &
Capstone Project Expo

Department of Integrated Information Technology (IIT)
University of South Carolina

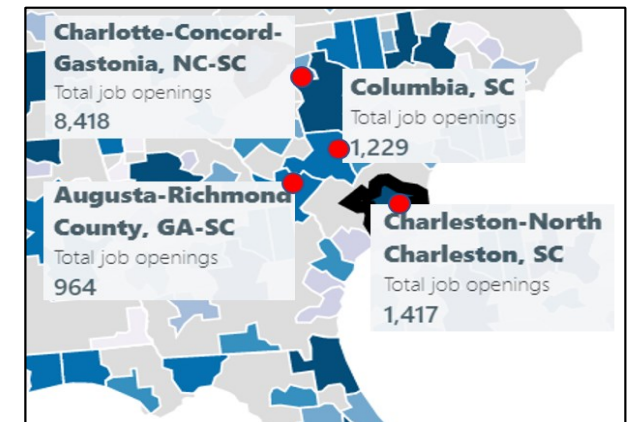
April 22, 2022
Online

ONR's Cyber Project



- “Enhancing the Preparation of Next-generation Cyber Professionals” (2020)
- South Carolina cybersecurity needs
 - SRNL, Fort Jackson, Shaw Air Force Base, private industry
- Recruiting the American military’s cyber force is more difficult than ever
 - DoD has been struggling to hire more than 8,000 cyber positions (2018)¹
- The College of Engineering and Computing is addressing the workforce needs:
 - Strengthening the curriculum
 - Providing undergraduate applied research
 - Deploying cloud systems w/ open source and professional tools
 - Collaborating with industry, government (Cisco, Palo Alto, Intel, Juniper, VMware)

Cybersecurity job openings in four metro areas near Columbia, Feb. 2020



1. J. Lynch, “Inside the Pentagon’s Struggle to Build a Cyber Force,” Fifth Domain publication, October 29, 2018. Online: <https://tinyurl.com/yyelqomp>

ONR's Cyber Project



- Option to earn credentials
- DoD's Information Assurance (IA) workforce is classified in IA technical (IAT):
 - Level 1 (IAT 1): Computing environment information assurance
 - Level 2 (IAT 2): Network environment information assurance
 - Level 3 (IAT 3): Enclave, advanced network & computer information assurance

Certificate	Material Covered in	IAT 1	IAT 2	NICE framework	Networks cert.
A+	ITEC 233	✓		✓	
Cyberoperations	ITEC 293	✓		✓	
Security+	ITEC 293	✓	✓	✓	
CCNA Security	ITEC 493	✓	✓	✓	
CCNA Routing/Switching	ITEC 245, ITEC 445				✓
ACE	ITEC 493			✓	
PCNSE	ITEC 493			✓	

NICE: National Initiative for Cybersecurity Education (NIST)

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Undergraduate Research Cybersecurity (Main room)

Time	Topic	Presenter
16:00 – 16:15	Welcome from ONR, USC, and project team	Dr. M. Simpson (ONR), Dr. H. Haj-Hariri (Dean, College of Engineering and Computing at USC), Project team: J. Crichigno, J. Gerdes, Major Knight, J. Salter, 1LT Ebony Penton, R. Cox
16:15 – 16:30	Implementing a Monitoring Device using a P4 Programmable Switch [pptx , video]	Samuel Dao, Mark-Anthony Box
16:30 – 16:45	Geolocation and Geoblocking [pptx , video]	Andrew Clements, Avery Schiro
16:45 – 17:00	Implementing a Packet Filter using a P4 Programmable Switch [pptx , video]	Gabriella Pinto, Cameron McDuffie
17:00 – 17:15	Using External Dynamic List for Live Threat Updates [pptx , video]	David Williams, Tucker Baron
17:15 – 17:30	Protection against Brute-force Attacks [pptx , video]	Timothy Dao, Dillon Barnhardt
17:30 – 17:45	Implementing a NAT Device using a P4 Programmable Switch [pptx , video]	Samuel Kelley, Talha Gill
17:45 – 18:00	Concluding remarks	Project team
Workshop		

http://ce.sc.edu/cyberinfra/onr_workshop_spring_2022.html

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Capstone projects (Breakout Rooms)

Room 1: Mechanical Engineering Materials Database

Room 2: Legal Dispute Cost Estimator – Back End

Room 3: Legal Dispute Cost Estimator – Front End

Room 4: Farm Automation with IOT

Room 5: Boeing HyperLedger Fabric

Room 6: IIT Department Tool Enhancement

Room 7: Military EFMP Project

Room 8: StairGram System

Room 9: Develop IIT Website Framework

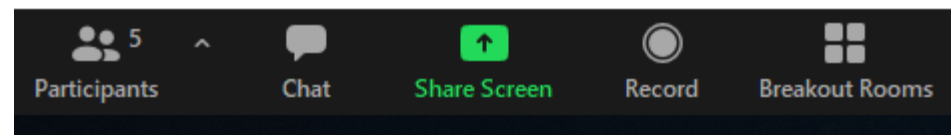
Room 10: Snap Tours

Room 11: Xpress Website Update

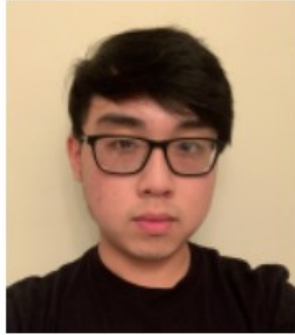


To enter a breakout room, please check at the bottom of your screen.

If you do not see this symbol, please ask for assistance in the chat window



Implementing a Monitoring Device using a P4 Programmable Switch



Samuel Dao

- Sophomore IIT student, minor CS, from Greenville SC
- Undergraduate IT Technician for the CEC
- Interested in cybersecurity and networking



Mark-Anthony Box

- Sophomore IIT student from Greenville, SC
- Minor in Japanese
- Plan on enlisting in the Navy and going for a cyber security position

Geolocation and Geoblocking



Andrew Clements

- From Spartanburg, SC
- In the U.S. Army from 1999 to 2016
- Deployed to Iraq in support of Operation Iraqi Freedom and to Afghanistan in support of Operation Enduring Freedom



Avery Schiro

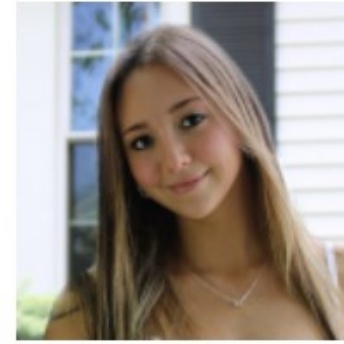
- Junior in IIT, from Staten Island, NY
- Previously a Visual Communications major
- Interested in expanding her knowledge in cyber security and sharpening her skill set

Implementing a Packet Filter using a P4 Programmable Switch



Cameron McDuffie

- Sophomore pursuing a BSC in IIT
- IT experience, working at a computer repair shop and at the College of Engineering and Computing help desk



Gabriella Pinto

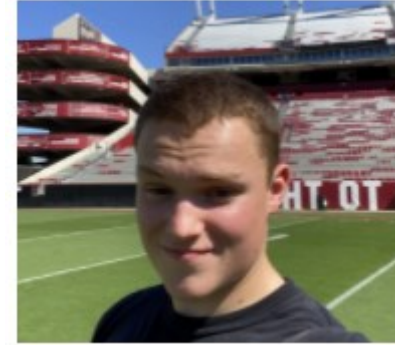
- Junior in IIT, from Pittstown, New Jersey
- President of Women in Computing and Vice President of the Association for Information Systems student organizations
- Interested in cybersecurity, cyber-threats

Using External Dynamic List for Live Threat Updates



David Williams

- Senior IIT student
- Joined the NC Army National Guard in 2018 and deployed to Kuwait in support of Operation Enduring Freedom
- Active in the NC Army National Guard



Tucker Baron

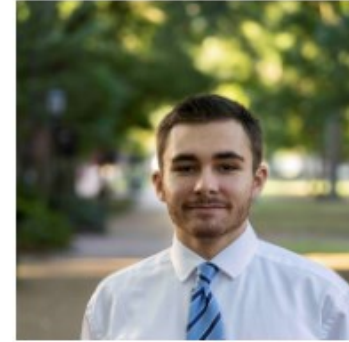
- Cyber intelligence major from Beaufort, South Carolina
- Army ROTC cadet
- Interest in cybersecurity

Protection against Brute-force Attacks



Timothy Dao

- Senior IIT student from Greenville, SC
- Currently working with the Division of IT at USC
- Interested in learning more about networking and cyber-security



Dillon Barnhardt

- Sophomore IIT student
- South Carolina Army National Guard
- Currently working as IT Technician at Healthcare, SC LLC

Implementing a NAT Device using a P4 Programmable Switch



Samuel Kelley

- Junior IIT student
- Interested in technology for a long as he can remember, building PC's, tinkering with electronics, etc.
- Interested in cybersecurity and networking



Talha Gill

- Senior IIT student from Lexington, SC
- Originally on pre-med track
- Interested in networking and cybersecurity