



Coastal Virginia Center for Cyber Innovation

July 14, 2021

4th Quarter Project Report April 2021 – June 2021

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**The Commonwealth Cyber Initiative CoVA CCI Node Quarterly Update
for 4th Quarter/Annual Report, Fiscal Year 21**

General

COVA CCI focus during the 4th Quarter of FY 21 was on continuing the five funded cybersecurity research projects, initiating selected CCI Collaboration Research projects and supporting spring 2021 activities

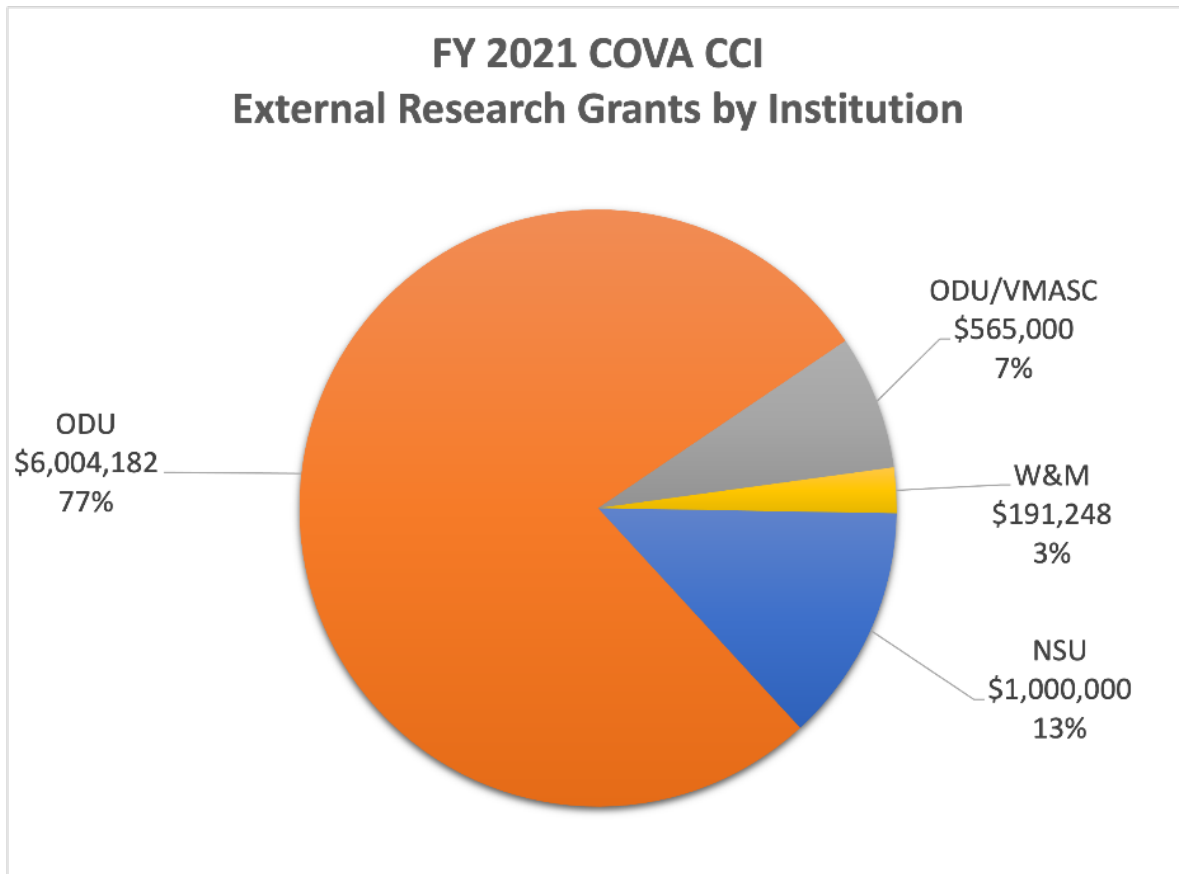
1. During FY 2021, COVA CCI academic institutions were awarded approximately \$7.7 million dollars in cybersecurity grants from government and private industry.
2. Researchers continue to work on the five previously funded cybersecurity research projects, funded by COVA CCI in May 2020, with each closing their projects on June 30, 2021.
3. The COVA CCI FY 22 Cybersecurity and Innovation Research RFP was released, and five projects were selected to start on July 1, 2021.
4. Awarded \$1.96 million dollars in CCI sponsored projects – Collaborative Research \$1.12 million dollars, Disinformation & Misinformation \$149,000, Innovation Bridge Fund \$100,000, Arts & Design \$37,500, Experiential Learning \$300,000, and Experimental Research in CCI Testbeds \$250,000.
5. COVA CCI supported nine (9) graduate assistants, during spring 2021, with experiential learning opportunities by supporting various COVA CCI activities at partner institutions. Six of these students are supporting cybersecurity businesses.
6. Continued to work with the Virginia Space Grant Consortium on the Cybersecurity Internship program to place cybersecurity students from across the region into internship opportunities. To date sixteen students have been placed as interns throughout the region.
7. Developed a regional network of over 90 researchers, faculty, and business partners working for eight colleges/universities and 20+ businesses
8. Continued the construction of the Cyber Innovation Park located on the main campus of Old Dominion University. This center will house COVA CCI and the ODU School of Cybersecurity. Completion is anticipated by August 2021
9. Invested \$708,000 to develop a shared collaborative research computing environment (COVA SHARE). COVA SHARE will support the growing cybersecurity programs, academic and research collaboration opportunities CCI institutions, and industry partnerships; lay the foundation to support 5G testbed data collection and provide secure storage and transfer between connected Node members and to the CCI Hub for analysis and other collaboration.

Visit www.covacci.org for more information on all of the projects and activities sponsored by COVA CCI.

Update on the Seven Requirements

1. External Research Grants Attracted to Support the Work of CCI

Narrative: During FY 2021 over \$7.7 million in research grants were awarded to COVA CCI researchers. Each of these grants has a PI or Co-PI affiliated with or received funding directly from COVA CCI and/or CCI for their research.



FY 2021 External Grants

External Research Grants Attracted to Support the Work of CCI			
Project Title	Sponsor	Award Organization & PI	Amount
Center of Excellence in Cyber Security	Air Force Research Lab	NSU George Hsieh	\$1,000,000
AI-Human Collaboration in Autonomous Vehicles for Safety and Security	NSF	ODU Hongyi Wu	\$500,000
Developing Cyber Talents to Secure DoD Cyberspace	NSA	ODU Chunsheng Xin	\$75,000

Deep Learning Driven Cybersecurity Research in a Multidisciplinary Environment	NSF	ODU Chunsheng Xin	\$405,000
Tangram: Scaling into the Exascale Era with Reconfigurable Aggregated “Virtual Chips”	NSF	ODU Danella Zhao	\$213,426
Building Cybersecurity Inclusive Pathways towards Higher Education and Research (CIPHER)	NSF	ODU Hongyi Wu	\$100,000
Side-channel Eavesdropping with Motion Sensors	NATO	ODU Hongyi Wu	\$30,000
JROTC Students to Defend the Cyberspace	NSA	ODU Chunsheng Xin	\$100,000
Hampton Roads NROTC Consortium Midshipman Cyber Research and Training	ONR	ODU Chunsheng Xin	\$250,000
BlockFL: A Blockchain-based Fully Distributed Federated Learning Framework	Industry	ODU Hongyi Wu	\$ 84,129
Cyber Security Center of Excellence	DOD & OSD	ODU Hongyi Wu	\$225,000
AI Human Collaboration in Autonomous Vehicles for Safety and security	NSF	ODU Jing Chen	\$500,000
CAREER: Memory-Efficient, Heterogeneity-Aware and Robust Architecture for Federated Intelligence on Edge Devices	NSF	ODU Cong Wang	\$470,023
ODU GENCyber JROTC Students and Teachers Interactive Learning	NSA	ODU Danella Zhao	\$125,000
Preparing Future Cybersecurity LeADERS through Community College Partnerships and Applied Learning Experience	NSF	ODU Brian Payne	\$3,906,604

Cyber Risk and Resilience Analytics	FTI	ODU/VMASC Sachin Shetty	\$33,000
Assured Cyber Supply Chain Provenance using Permissioned Blockchain	Department of Energy	ODU/VMASC Sachin Shetty	\$87,500
Cyber Resilience Metrics for Bulk Power Systems	Department of Energy	ODU/VMASC Sachin Shetty	\$75,000
Modeling Security Risk to and Resiliency of Energy Delivery Systems using Software Defined Networks, Department of Energy	Department of Energy	ODU/VMASC Sachin Shetty	\$125,000
AI Model Certification in Operational Environments	MITRE	ODU/VMASC Sachin Shetty	\$66,000
Bulk Electric Systems Supply Chain Cyber Risk Management	Department of Energy	ODU/VMASC Sachin Shetty	\$317,000
Cyber Security Center of Excellence	DoD OSD	ODU/VMASC Sachin Shetty	\$225,000
Blockchain Empowered Cyber Resilient Networked Device Identity Management Platform	CIT	ODU/VMASC Sachin Shetty	\$150,000
Advanced Instrumentation Technology Spectrum Risk Assessment	Circadence	ODU/VMASC Sachin Shetty	\$276,000
Advancements in low-latency, resilient and energy-efficient 5G networks for smart warehouse	DoD	ODU/VMASC Sachin Shetty	\$850,000*
Cyber Risk and Resilience Analytics	Frontier Technology, Inc	ODU/VMASC Sachin Shetty	\$106,000
Efficient Checkpointing on Heterogeneous Architectures	DoE	W&M Adwait Nadkarni	\$19,270
Virtual Hearings in Agency Adjudication	Administrative Conference of the United States	W&M Fred Lederer	\$28,000
Collaborative Research: Context-aware Freezing of Gait mitigation in the real-world setting	National Institute of Health	W&M Gang Zhou	\$83,978

Enabling Efficient Sharing of Emerging GPUs	Google	W&M Adwait Nadkarni	\$60,000
Total			\$7,760,430

* This is the ODU portion of the total grant awarded in the amount of \$13 million dollars.

2. Research Grants Awarded from the Funds Contained in HB30

Narrative: COVA CCI is providing funding under the research category for several initiatives.

1) FY 2020/2021. COVA CCI is providing funding through the **COVA CCI Cybersecurity Research and Innovation Funding program**. This program supports diverse and inclusive CPSS research efforts, with a focus on the intersection of artificial intelligence (AI), cybersecurity, and CPS technologies applied to maritime, transportation, and defense sectors. Five projects were approved in April 2020 for a total of \$679,429. These projects will be completed in June 2021. Project abstracts and additional information can be found on the [COVA CCI /Research/Cybersecurity Research website](#).

Project Title	Institutions	Amount
Leveraging AI and Machine Learning to Develop New CPSS and Workforce Development Solutions	Old Dominion University CivilianCyber	\$150,000
Trust, Interoperability and Inclusion: A Framework for Creating Cyber-Trust in Connected Homes	William & Mary Old Dominion University	\$150,000
Encouraging Positive Changes in Cyber Hygiene Behaviors and Knowledge in the Department of Defense	Old Dominion University MI Technical Solutions	\$87,709
Securing IoT Devices through Power Side Channel Auditing and Privacy Preserved Convolutional Neural Networks	William & Mary Old Dominion University	\$150,000
Explore Privacy-Preserving in Deep Image Retrieval Systems	Old Dominion University William & Mary Hampton University	\$142,720

2) COVA CCI is funding **Cybersecurity Curriculum Development projects** that are focused on identifying gaps in existing curricula and the development of strategies to fill these gaps. Two projects were funded in Q3 2020 for a total of \$20,000. An additional five projects were

approved in Q1 2021 for a total of \$60,000. Information and links to the final curricula are found on the [COVA CCI Talent Development/Curriculum Development website](#).

COVA CCI curriculum development projects		
Project Title	Institutions	Amount
Q4 2020		
Fundamentals of Cybersecurity for local governments and SME leaders	William & Mary	\$10,000
Implementing Blockchain Applications	Old Dominion University	\$10,000
Q1 2021		
Small College Cybersecurity Curriculum Enhancement Project	Paul D. Camp Community College	\$10,000
Core Legal Topics in Cybersecurity for non-lawyers	Tidewater Community, College William & Mary	\$20,000
Information Literacy for Cybersecurity	Old Dominion University	\$20,000
International Cyber Policy Training and Competition	Old Dominion University	\$10,000

3) COVA CCI has supported two iterations of a **Cybersecurity Undergraduate Research Program – Spring 2020 and Fall 2020**. This program leverages the strength of research-extensive institutions to support active research participation by undergraduate students in the area of cybersecurity. Students will have opportunities to explore a variety of cutting-edge research topics, including but not limited to: Blockchain Security, Cyber Law & Policies, Human Behavior Security, Online Scams, Mobile Protection, Secure Digital Printing, Secure Internet of Things, Secure Machine Learning, Social Engineering, and Wireless Security. The student research is found on the [COVA CCI/Innovation/Undergraduate Research website](#).

COVA CCI cybersecurity undergraduate research program		
Project Title	Institutions	Amount
UG Cybersecurity Research Session 1 (4/13/20 – 7/31/20)	Christopher Newport Univ, Old Dominion University, Tidewater Community College	\$30,000
UG Cybersecurity Research Session 2 (8/29/20 – 12/19/20)	Christopher Newport Univ, Old Dominion University	\$15,000

4) COVA CCI awarded five (5) projects totaling approximately \$1 million dollars, as part of the CCI led **Cybersecurity Collaboration Research project**. The funding projects are listed below. See this article for more details - [cci-funds-22-cybersecurity-grants](#).

COVA CCI led Cybersecurity Collaboration Research projects

Title	PI / Univ	Co-PI / Univ	Cost
Secure and Privacy Preserving 5G Network for Connected Vehicles	Sachin Shetty/ODU	Tan Le (ODU) Jeff Reed (VT) Cong Shen (UVA) Duminda Wegesekera (GMU) Kai Zend (GMU)	\$200,000 ODU – \$57,523 VT – \$35,976 UVA – \$35,500 GMU – \$71,001
Backdoor Detection and Mitigation in Deep Neural Networks	Hongyi Wu/ODU	Chunsheng Xin (ODU) Jiang Li (ODU) Rui Ning (ODU) Jin-Hee Cho (VT) Leigh Armistead (Peregrine)	\$184,816 ODU – \$136,532 VT – \$48,284
DeepPOSE: Securing Transportation Systems from GPS Spoofing Attack	Chunsheng Xin/ODU	Danella Zhao (ODU) Yanxiao Zhao (VCU) Kevin Kefauver (GCAPS)	\$200,000 ODU – \$101,175 VCU – \$50,000 VT – 48,825
A Systematic Evaluation of Smart City Security and Privacy	Adwait Nadkarni /WM	Yuan Tain (UVA)	\$194,850 WM - \$95,460 UVA – \$99,390
Virginia State Investments in Port of Virginia: A simulation-based framework for identifying, assessing, and mitigating systemic cybersecurity at the operational technology layer.	Rafael Diaz/ODU	H. Shen (UVA)	\$200,000 ODU –\$77,761 UVA –\$122,239

COVA CCI Cybersecurity Collaboration Research Projects with COVA CCI as Co PI

Title	PI / Univ	Co-PI / Univ	Cost
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Sensor Degradation Detection Algorithm for Automated Driving Systems,	Michelle Chaka/VT	Chunsheng Xin (ODU)	ODU - \$75,000
Developing an Open Architecture Testbed and Learning-based Management for Smart Cities (OpenCity)	Sherif Abdelwahed/VCU	Murat Kuzlu	ODU - \$65,000

5) **CCI Arts and Design Collaboration Project.** The Arts and Design Collaboration challenges the community of researchers in the Arts and Design to reimagine and depict the results of cybersecurity research (and in particular research that occurs in CCI) either for scientific purposes, or for creative arts practice purposes. In response to this RFP, COVA CCI was awarded two projects.

Title	PI / Univ	Co-PI / Univ	Cost
Develop a Gamified Mobile Application for Cybersecurity Education and Assessment via a User Centered Design Process	Kevin Moberly/ODU	Ryan Patton/VCU, Deri Draper /ODU, Jeff Pittges/Radford, Bobby Keener/CivilianCyber.	ODU - \$25,000
Moving Choreography to a New Universe: an AI-Driven Privacy Automation Approach	Kate Sicchio/VCU	Sachin Shetty/ODU Yan Lu/ODU	ODU - \$12,500

6) **CCI Experiential Learning Project.** COVA CCI received two projects in response to the 2021 CCI Experiential Learning CFP.

Title	PI / Univ	Co-PI / Univ	Cost
Cybersecurity Monitoring and Assurance Training Program for Safe and Secure Port Operations	Sachin Shetty/ODU	Saltuk Karahan/ODU, Sarada Prasad/ODU, Jim Haug, Longwood, Darrell Carpenter, Longwood, Jennifer Maeng, UVA, Thomas Polmateer, UVA,	\$150,000

		Lessie Oliver-Clark, VSU, Wei-Bang Chen, VSU, Wookjin Choi, VSU, Rich Ceci, VIT	
Cyber Risk Management and Analytics: An Interdisciplinary Approach in Experiential Learning	Abraham/W&M		\$150,000

7) CCI Experimental Research in CCI Testbeds. COVA CCI received three projects in response to the 2021 CCI Experimental Research in CCI Testbeds CFP.

Title	PI / Univ	Co-PI / Univ	Cost
Experimental Research: Investigating Robustness and Uncertainty of AI Algorithms in Cyber Physical Systems	Rui Ning/ODU	Jiang Li (ODU) Xinwei Deng (VT) Laura Freeman (VT) Yili Hong (VT)	\$49,906
Beamforming Optimization for 5G and Beyond	Chunsheng Xin/ODU	Hongyi Wu	\$50,000
Building a THz Testbed to Expand CCI 5G Testbed for 6G Research	Hongyi Wu/ODU	Chunsheng Xin	\$150,000

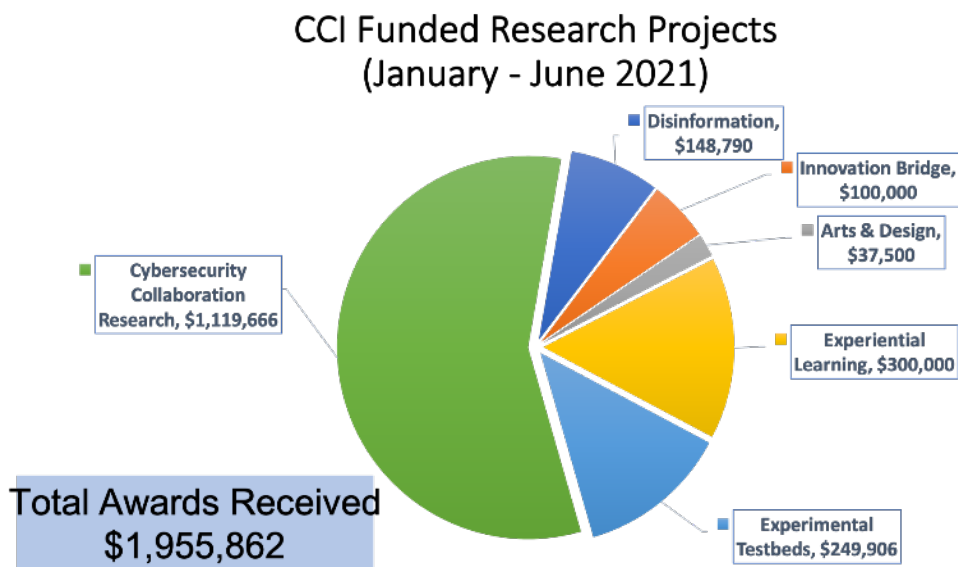
8) Role of Cybersecurity in Spread of Disinformation and Misinformation. COVA CCI received two projects in response to this RFP as lead PIs and one as a Co-PI with George Mason.

Title	PI / Univ	Co-PI / Univ	Cost
The Acceptance and Effectiveness of Explainable AI-Powered Credibility Labeler for Scientific Misinformation and Disinformation	Jian Wu/ODU	Jerimiah Still (ODU) Jiang Li (ODU)	\$63,790
Question Under Discussion Framework to Analyze Misinformation targeting Security Researchers	Sachin Shetty/ODU	Teresa Kissel (ODU)	\$65,000

Artificial Intelligence Based Analysis of Misinformation and Disinformation Efforts from Mass Media and Social Media in Creating Anti-U.S. Perceptions	Kavak Hamdi/GMU	Saltuk Karahan (ODU) Hongyi Wu (ODU) Kim Perez (TCC)	\$64,996 (ODU - \$20,000)
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9) Cybersecurity Innovation Bridge Fund. COVA CCI received two awards as lead PIs and one as a Co-PI with VCU.

Title	PI / Univ	Co-PI / Univ	Cost
A Minimum Viable Product to Secure IoT Devices through Power Auditing and Privacy Preserved Convolutional Neural Networks	Gang Zhou/WM	Chunsheng Xin (ODU) Danella Zhao (ODU)	\$50,000 (ODU - \$21,333)
A Platform for Improving AI Trust in 6G Networks	Murat Kulzu/ODU		\$50,000
GINDAR - Generative Adversarial Networks (GAN)-based Internet-of-Medical-Things (IoMT) Network Detection and Response	Tamer Nadeem/VCU	Sachin Shetty (ODU)	\$50,000 (ODU - \$0)



3. Research Faculty Recruited

Narrative: The following research faculty were recruited and hired by the COVA CCI Node in the 1st Q 2021 and are continuing to work for CCI and other funded research projects.

- Le Thanh Tan, Old Dominion University, Ph.D., Engineering, Institut National de la Recherche Scientifique (2015).
- Rui Ning, Old Dominion University, Ph.D., Engineering, Old Dominion University (2020).
- Moeti Masiane, Norfolk State University, Ph.D., Computer Science & Applications, Virginia Tech (2020). Note that Dr. Masiane accepted a position with the federal government and will be leaving in July 2021.
- Daniel Shin, William & Mary, JD, Law, William & Mary (2019) – Hired Q3 2020
- Yan Lu, Old Dominion University, Ph.D., Modeling & Simulation, Old Dominion University (2020). Hired as a match.

Bios for these research scientists are found on the [COVA CCI website/People/Research Scientists](#).

Additional research scientists will be funded using the 2021 Research Collaboration funds: three for Old Dominion and one for William & Mary.

The three researchers for ODU have been selected and have a start date in July/August 2021.

- Tran Phoung (ODU School of Cybersecurity)
- Kazi Aminul Islam (ODU School of Cybersecurity)
- Masud Rana (ODU VMASC)
- In addition, ODU hired two additional scientists as a match – Lori Portman (ODU School of Cybersecurity) and Safdar Bouk (ODU VMASC).

William & Mary is in the process of interviewing and making a final selection for their research scientist.

4. Results of Entrepreneurship and Workforce Programming

Innovation, Workforce Development and Experiential Learning Programs

Narrative: COVA CCI is supporting several programs in innovation, workforce development, and student experiential learning. These include the INNOVATE Cyber Challenge, graduate student experiential learning program, and cybersecurity internship program.

Innovate Cyber Challenge. The innovation program consists of the INNOVATE Cyber Challenge. This program takes a cohort of 20 students from across the region and groups them into four teams. Each team is assigned a cybersecurity problem/challenge. They use

design thinking to come up with unique solutions for this problem. A total of 40 students have participated in the program - 20 in the spring 2020 semester and 20 in the fall 2020 semester.

The fall 2020 INNOVATE Cyber Challenge had 20 undergraduate students from Old Dominion University, Christopher Newport University, Norfolk State University, and Paul D. Camp Community College participated in this 11-week program from September – December 2020. Students were divided into five teams and each team was tasked with developing a final cyber-related product or solution related to the education and adoption of cyber hygiene. The projects were called Celebrate Cyber Security!, the Net Pet, Cyber Hygiene Seminars, C.H.A.I.N., and THECyberHygienits.com. A virtual showcase was held on November 18, 2020 for the students to pitch their solutions to a diverse group of faculty, administrators, and business contacts. A group of judges evaluated each project and selected Net Pet as the winning team for this cycle.

Visit the [COVA CCI/Innovation/Innovate Cyber Challenge webpage](#) to see each of the projects.

See this article to learn more about the program – [Fall 2020 INNOVATE Cyber Challenge](#).

ICC Survey Results

Students Agree/Strongly Agree they can:

- ✓ Apply the steps of the DT process to solve a problem
- ✓ Work as part of a team to propose solutions to problems
- ✓ Reflect on their DT experience using the human-centered design mindset

- Innovation is for Everyone
- Know Your Why
- Show & Tell
- Radical Collaboration
- Empathetic & Human-Centered
- Embrace Ambiguity
- Iterate, Iterate, Iterate

What Did You Like Most About the INNOVATE Cyber Challenge

“Working with a group of people with different opinions, but similar goals. Being able to collaborate made the experience great.”

“I liked how proactive the topics were in the individual meetings were, how passionate and helpful each advisors were in the program, how everything topic we learned can be used in real application in our future careers, and how rewarding it was to do a 5-minute pitch in front of real professional judges that helped develop my presentations skills that will be used frequently in future, educational and career wise.”

Graduate student experiential learning program. During the Spring 2021 semester, COVA CCI supported nine (9) graduate assistants with experiential learning opportunities by supporting various COVA CCI activities at partner institutions. One GRA was provided to Paul D. Camp Community College, and one GRA is assisting Christopher Newport University, to support cybersecurity classes and students. Two GRAs supported the Experiential Learning

and Academic Support committees with identify all cybersecurity related classes being offered at COVA CCI partner institutions. 5 GRAs are supporting local cybersecurity businesses on current projects within these companies; Peregrine Technical Solutions (2 GRAs), CivilianCyber (2 GRAs), and MI Technical Solutions (1 GRA). The students are coming out of Norfolk State University, Old Dominion University, and the College of William and Mary. Additional information can be found on the [COVA CCI/Talent Development/Experiential Learning Program website](#).

As a direct result of this program the student working with MI Technical Solutions was offered a full-time position with them after graduation in August 2021.

In addition, the student who supported Camp Community College has decided to pursue a doctoral degree in cybersecurity. He said, *“This opportunity has really changed my academic and professional tracks and I wanted to make sure you were aware of the impact this program had on me.”*

Below is some additional feedback from the students who participated in the spring 2021 program.

“Everything I am learning in the Cybersecurity master's program such as Cyber Risk Management Plans, are actually implemented while securing the networks of 14 different University research vessels. I learned about compliances and regulations that are needed for Cybersecurity with the International Maritime Organization.”

“This program gave me a lot of usable experience that directly contributed to my resume and career goals.”

“My placement company was excellent to work with. They treated me like a fellow employee, and I got to work on real projects.”

“This program opened a door for me to have a great job lined up.”

“The value the program added to my graduate studies was phenomenal as it strengthened my work ethic and enhanced my knowledge of cybersecurity.”

COVA CCI Cybersecurity Internship Program. COVA CCI is partnering with the Virginia Space Grant Consortium (VSGC) to manage the COVA CCI Cybersecurity Internship Program using their Commonwealth STEM Industry Program (CSIIP). VSGC will leverage CSIIP to build and improve on the relationships with employers across the Commonwealth to develop internship and experiential learning opportunities.

- To date sixteen students have been placed within the region. The intern placed with Peregrine Technical Solutions, Sam Grant, is the nation's first Department of Labor Youth Registered Apprentice. He was also a keynote speaker at the 2020 NICE K-12 Education Conference.

List of Businesses with Interns and Intern Institution

Company	Institution	Major
Arks Enterprises, Inc	Old Dominion University	Computer Engineering-Computer Hardware Systems
Arks Enterprises, Inc	Old Dominion University	Electrical and Electronics Engineering
AScIS	College of William and Mary	Computer Science
AScIS	Christopher Newport University	Computer Science
Grey Gecko, LLC	Christopher Newport University	Computational and Applied Mathematics
Grey Gecko, LLC	Old Dominion University	Cybersecurity
Intellectechs	Old Dominion University	Computer and Information Systems/Info Assurance
Intellectechs	Old Dominion University	Cybersecurity
Jenlyn	Old Dominion University	Cybersecurity
Jenlyn	Old Dominion University	Computer and Information Science
MI Technical Solutions	Tidewater Community College	Cybersecurity
Peregrine Technical Solutions, LLC	Old Dominion University	Cybersecurity
York County	Thomas Nelson Community College	Information Technology
York County	Thomas Nelson Community College	Information Technology
DroneUp	Old Dominion University	Engineering Technologies
Universal Solutions International, Inc. (USI)	Old Dominion University	Computer and Information Sciences

See the [COVA CCI/Talent Development/Cybersecurity Internships website](#) for additional information and links to the CSIP website.

Innovation / Entrepreneurship Grants Awarded		
Project Title	Institutions	Amount
INNOVATE Cyber Challenge (Spring 2020)	Christopher Newport Univ ECPI University Norfolk State University Old Dominion University Tidewater Community College William & Mary	\$25,000
INNOVATE Cyber Challenge (Fall 2020)	Christopher Newport Univ Norfolk State University Old Dominion University Paul D. Camp Community College Tidewater Community College	\$27,000
Total: \$52,000		

Workforce Development

Graduate Student Experiential Learning Program		
Project Title	Institutions	Amount
Graduate Student Experiential Learning Program (Spring 2020)	Christopher Newport Univ Old Dominion University William & Mary	\$15,000
Graduate Student Experiential Learning Program (Fall 2020)	Old Dominion University William & Mary	\$42,000
Graduate Student Experiential Learning Program (Spring 2021)	Norfolk State University Old Dominion University William & Mary	\$45,000
Total:		\$112,000

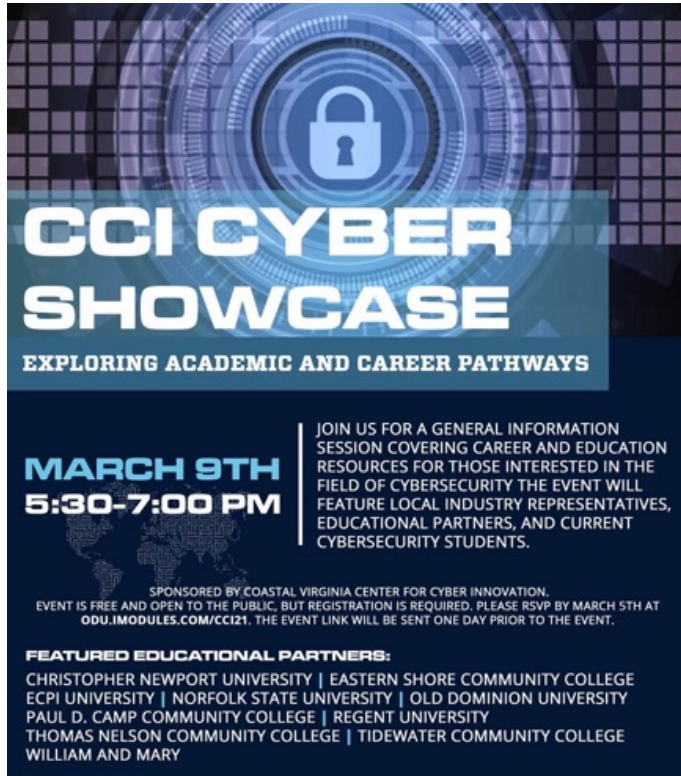
Internship Program		
Project Title	Institutions	Amount
Internship Program	CNU x 2, W&M, ODU x 10, TNCC x 2, TCC x 1	\$40,000
Total:		\$40,000

5. Collaborative Partnerships and Projects
CCI Cybersecurity Research Collaboration Funding

Narrative: COVA CCI is working with academic institutions from across the state on the recently awarded Cybersecurity Research Collaboration projects previously mentioned in this report. Researchers are also working business partners on potential federal funding opportunities and current research. Some of these partners include MI Technical Solutions, Peregrine Technical Solutions, CivilianCyber, and WR Systems.

6. Correlated Economic Outcomes (Jobs and New Business Formation)

Commercialization and Tech Transfer Assistance Program. In fall 2020 two research teams lead by Stephen Blackmon, William & Mary, and Chunsheng Xin, Old Dominion, participated in the Innovation Commercialization Assistance Program (ICAP), hosted by George Mason University. ICAP begins with a two-week session followed by a year-long program focused on customer discovery and developing a successful business model. ICAP is funded by the Commonwealth and there is no charge to participants. Each of these teams completed the November 2020 training session and are continuing to develop their business plans as part of their commercialization efforts. See the [COVA CCI/Partners](#) website for a list of current academic and business partners.



The **COVA CCI External Partnership Committee** is actively working with industry partners and K-12 school districts. On March 9, 2021, COVA CCI hosted a Cyber Showcase for high school students interested in learning about the cybersecurity programs available in the region. Over 120 attendees participated in the event.

Tracy Gregorio, President of G2OPS and the event co-organizer said, *“Our goal was to reveal to the students and parents the wide variety of career paths available in Cybersecurity. Every business and industry has a touch point with technology that needs to be protected. The careers vary from technical, law enforcement, teaching, policy development and on and on.”*

Our state is investing in our future workforce through these initiatives and as a business owner, it’s a privilege to participate and build our future employees.”

To learn more about the showcase visit - [ODU Presents at CCI Cyber Showcase](#)

See [COVA CCI/Events](#) for previous COVA CCI and CCI sponsored events.

7. Geographic Distribution of Awards from the Funds Contained in HB30

Distribution of COVA CCI Allocated Funds across the node region

Distribution of Funds Across the Node Region	
Institution	Amount
Christopher Newport University	\$5,000
Norfolk State University	\$154,300
COVA CCI Shared Research Environment	\$708,610
Old Dominion University	\$1,020,247
William & Mary	\$415,843
Virginia Tech	\$9,000
Tidewater Community College	\$10,000
Paul D. Camp Community College	\$10,000
Virginia Space Grant Consortium [1]	\$167,000
Christopher Newport students	\$27,000
Norfolk State University students	\$3,000

Old Dominion University students	\$37,500
Paul D. Camp CC	\$1,000
Tidewater Community College Students	\$10,500
William & Mary students	\$1,000
MI Technical Solutions (Sub-contract) [2]	\$39,563
Civilian Cyber (Sub-contract) [2]	\$92,000
Total Committed Funds	\$2,500,000

Note 1. VSGC is supporting the internship program, undergraduate cybersecurity research program, and the INNOVATE Cyber Challenge with payments to students from different institutions across the region. Funding listed for each partner institution shows the amount of support provided to students in these programs. The total amount of \$167,000 includes student payments and administrative support.

Note 2. Old Dominion is working with MI Technical Solutions and Civilian Cyber as subcontractors for two different cybersecurity research projects. These are the amounts provided to the two companies and are included in the overall ODU support.

Distribution of 2021 CCI Collaborative Research Funds across CCI Network

Distribution of Funds Across the CCI Network	
Cross Node Collaboration Research projects (1)	
Old Dominion University	\$437,991
William and Mary	\$95,460
University of Virginia	\$257,129
Virginia Commonwealth University	\$50,000
Virginia Tech	\$84,260
George Mason University	\$71,001
Total	\$995,841

Note 1: Funds for projects with COVA CCI PI or CO-PI.

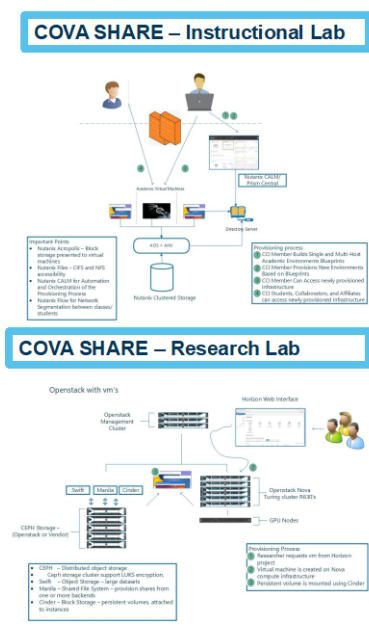
Cyber Innovation Park and Shared Research Environment

Cyber Innovation Park is being developed on the ODU campus with an investment of \$2 million dollars. It will include about 10,000 square foot space in Monarch Hall, for housing a data center, multiple research labs, teaching labs and classrooms, meeting space, faculty offices, and a student cyber incubator. Part of the space will be reconfigurable to support cybersecurity events such as cybersecurity competitions and workshops. The Cyber Innovation Park is anticipated to be finished late spring 2021. It will become home to ODU's School for Cybersecurity and COVA CCI, supporting various cybersecurity research, innovation, commercialization, and talent development efforts.

COVA CCI is investing \$708,000 in a shared collaborative research computing environment, known as COVA Share, to support the growing cybersecurity programs, academic and research collaboration opportunities, and industry partnerships. Guided by the researchers

in the Coastal Virginia Center for Cyber Innovation, the computing center and network investment will support the COVA Node and enable communication to the Hub and other Nodes. The environment will lay a foundation to support 5G testbed data collection, secure storage and transfer between connected Node members and to the CCI Hub for analysis and other collaboration. It will provide access to a flexibly designed computing environment via connectivity improvements between ODU and William & Mary, and between ODU and Norfolk State University for potential collaborative efforts involving secure transfer of data between schools or secure remote access to physical or virtual hosts.

Visit the [COVA CCI/Research/COVA SHARE website](https://www.covalab.org/Research/COVA%20SHARE) for additional information on COVA SHARE, including a short overview YouTube video.



Nutanix NX-3460-G5 and G6 & CALM platform

- Self-service provisioning
- Instructor driven blueprint classroom development
- Single and multi-host
- Persistent Semester-based labs
- Class/student-based segregation with Nutanix Flow
- ODU and Guest Faculty accounts
- CRN-based student accounts

Dell R630, R640, C4140, and R740XD & OpenStack platform

- Horizon Web Interface
- Protected environment
- Globus Data Transfer Integration
- Windows, Linux VM hosts with access to:
 - GPU nodes
 - Object Storage
 - File Shares
 - Block Storage
- High Performance Computing architecture
- Collaboration via Guest Researcher & RA Accounts

Regional Student Opportunities:

- Hands-on lab exercises
- Remote access to virtual labs
- Basic to advanced cybersecurity configurations
- Student Association sponsored access to labs
- Competition practice labs
- Undergraduate & Graduate research assistant access
- Remote instruction "classroom" labs

Coastal Virginia Node – Commonwealth Cyber Initiative

COVA CCI Node in the News

COVA CCI has been activity promoting the success of its various activities through local news sources. Below is a list of relevant news stories from the past 12 months.

ODU News (June 25, 2021)

[ODU Receives \\$1.45 Million State Grant Aimed at Boosting Cybersecurity Workforce](#)

William & Mary News (May 5, 2021)

[Adwait Nadkarni is trying to keep 'smart cities' from becoming really dumb](#)

ODU News (March 26, 2021)

[ODU Presents at CCI Cyber Showcase](#)

[Old Dominion University Part of Collaboration on \\$13 Million Department of Defense Contract](#)

Virginian Pilot (March 9, 2021)

[Opinion: ODU using real-world experience to shape higher education programs](#)

ODU News (February 19, 2021)

[ODU School of Cybersecurity and Center for High Impact Practices Receive \\$3.9 million NSF Grant](#)

ODU News (February 9, 2021)

[Old Dominion University Professors Awarded Nearly \\$1 Million in Cybersecurity-Related Grant Funding Through Coastal Virginia Center for Cyber Innovation](#)

ODU News (November 12, 2020)

[Fall 2020 INNOVATE Cyber Challenge](#)

Howard University News (October 19, 2020)

[DoD awards Howard University Center of Excellence in AI and ML](#)

Richmond Times Dispatch (September 30, 2020)

[ODU's new school of cybersecurity addresses a basic human need in today's connected world](#)

ODU Launches School of Cybersecurity

[Virginia Business \(October 1, 2020\)](#)

[WAVY10 News \(September 30, 2020\)](#)

[ODU News \(September 25, 2020\)](#)

ODU News (July 29, 2020)

[ODU Psychology Professor Tackles Poor Cyber Hygiene](#)