17th International Conference on Cyber Warfare and Security
ICCWS 2022
17 - 18 March 2022
State University of New York at Albany, USA

EST	GMT			
		Wednesday 16 March 2022		Zoom Room Login Details **PASSCODES FOR ALL ROOMS IS: ICCWS22** Plenary Zoom Room 1 – the conference will start in this room https://us02web.zoom.us/j/82500297676 Zoom Room 2 https://us02web.zoom.us/j/88026364822 Zoom Room 3 https://us02web.zoom.us/j/86871149932
10:00	14:00	**Pre Conference Workshop** **How Cyber Warfare and Information Operations are changing Everything!** **Presented by Dr Leigh Armistead**		
18:00		**Pre Conference Registration and Drinks, Courtyard by Marriott Albany Thruway (finishes at 18:30)**		
		Thursday 17 March 2022		
07:30	11:30	**Conference Registration in the ETEC Lobby at State University of New York at Albany, USA** **Zoom Room opens for virtual participants**		
08:00	12:00	**Room 1: ETEC 149/151** **Welcome and Opening of the Conference: Dean Robert Griffin, State University of New York at Albany, USA**		
08:15	12:15	**Keynote Presentation: Heather Hage, Griffiss Institute (GI), USA** ***Runways to Rome***		
09:00	13:00	***Conference splits into streams***		
		Zoom Room 1 & ETEC 149/151 **Stream A: Defense** **Chairs: Stephen Taylor**	**Zoom Room 2 & ETEC 105** **Stream B: Trust** **Chair: Arianit Maraj**	**Zoom Room 3 & ETEC 107** **Stream C: Cloud** **Chairs: Clara Maathuis**
09:10	13:10	The Role of Bigh Tech in Future Cyber Defence Angela **Mison**, Gareth **Davies** and Pete **Eden** University of South Wales, Caerphilly, UK	Zero Trust Container Architecture (ZTCA): A Framework for Applying Zero Trust Principals to Docker Containers Darragh **Leahy** and Christina **Thorpe** Technological University Dublin (TU Dublin), Ireland	Aligning South African Data and Cloud Policy with POPI@ Emma **Raaff**, Nicole **Rothwell** and Aidan **Wynne**, Stellenbosch University, South Africa
09:30	13:30	Circuit-Variant Moving Target Defence for Side-Channel Attacks Tristen **Mullins**, Brandon **Baggett**, Todd **Andel** and J. Todd **McDonald**, University of South Alabama, Mobile, USA	I Know You by Heart: Biometric Authentication based on Electrocardiogram (ECG) signals Christoph **Lipps**, Lea **Bergkemper**, Jan **Herbst** and Hans Dieter **Schotten**, German Research Center for Artificial Intelligence, Kaiserslautern, Germany	Blockchain Technology for Addressing Privacy and Security Issues in Cloud Computing Pardis Moslemzadeh **Tehrani**, Andasmara Rizky **Pranata**, University of Malaya, Kuala Lumpur, Malaysia and Gabriele **Kotsis**, Johannes Kepler Universität, Linz, Austria
09:50	13:50	Ontologies for Mitigation Selection of Industrial Control System Vulnerabilities Thomas **Heverin**, Andrew **Zeyher**, Andy **Zeyher**, Matthew **Lashner** and Sanjana **Suresh,** Drexel University, USA Michael **Cordano,** Gryphon Technologies, Philadelphia, USA (In Person Presentation)	Zero Trust and Advanced Persistent Threats: Who Will Win the War? Bilge **Karabacak** and Todd **Whittaker**, Franklin University, Columbus, USA	Identifying Adversaries' Signatures Using Knowledge Representations of Cyber-attack Techniques on Cloud Infrastructure Gilliam **Van Der Merwe**, Christian **Muller**, Wilhelm **Van Der Merwe** and Dewald **Blaauw**, Stellenbosch University, South Africa
10:10	14:10	Social Media Privacy EDEE Security Model Benjamin **Yankson**, Eric Cajigal **Delgado**, Sydney **Davidson**, Natalie **Gitin** and Amjad **Al-Jabri**, University at Albany, USA (In Person Presentation)	Cyberbullying indicator as a precursor to a cyber construct development Salman Khalifa **Al-Romaihi**, Community College of Qatar, Doha, Qatar and Richard Adeyemi **Ikuesan**, Zayed University, Abu Dhabi, UAE	WFH, no WTH! Neal **Kushwaha**, IMPENDO Inc. (Canada), Ottawa, Canada, Piret **Pernik**, CCDCOE, Estonia and Bruce **Watson**, Stellenbosch University, South Africa
10:30	14:30	***Break - Coffee in ETEC Lobby***	***Break - Coffee in ETEC Lobby***	***Break - Coffee in ETEC Lobby***

EST	GMT	Zoom Room 1 & ETEC 149/151 **Stream A: Mini Track on Legal, Security and Drone's** Chairs: Pardis Moslemzadeh Tehrani	Zoom Room 2 & ETEC 105 **Stream B: Education** Chairs: Sabarathinam Chockalingam	Zoom Room 3 & ETEC 107 **Stream C: PhD Colloquium** Chairs: Omer Keskin & Saltuk Karahan (10 minute presentations with questions and discussion)
10:50	14:50	Critical Systems Protection (CSP): Uncovering The Secret Service's Tactical Cybercapability for Securing Protectees Austin **Hyman**, Brian **Nussbaum**, Mario **Bencivenga**, and Zachary **Rizzo**, SUNY Albany, USA (In Person Presentation)	Addressing the Skills Shortage Gareth **Davies**, Angela **Mison** and Peter **Eden**, University of South Wales, Caerphilly, UK	Need for a Cyber resiliency framework for Critical Space Infrastructure Syed **Shahzad**, Li **Qiao** and Keith F **Joiner**, University of New South Wales Canberra, Australia Ransomware detection using process memory Avinash Singh, Hein Venter, University of Pretoria, South Africa and Richard Adeyemi Ikuesan, Community College Qatar, Qatar The Cumulative Cyber Deterrence Maija **Turunen**, Finnish National Defence University, Helsinki and Martti J. **Kari**, Jyväskylä University, Finland Human Errors: A Cybersecurity Concern and the Weakest Link to Small Businesses Tabisa **Ncubukezi**, Cape Peninsula University of Technology, Cape Town, South Africa What is a Substantial Contribution to a Research project in Offensive Cyberspace Operations that Merits Co-Authorship? Gazmend **Huskaj**, Department of Military Studies, Stockholm, Sweden
11:10	15:10	Integrating Democratic Cybersecurity: Empowerment of Traditional Law Enforcement and Democratic Public Safety Michael **Losavio**, Jeffrey **Sun**, Sharon **Kerrick,** Adel **Elmaghraby**, Sheryl Purdy and Clay Johnson, University of Louisville, USA (In Person Presentation)	Education and training against threats of phishing emails Ladislav **Burita**, Ivo **Klaban** and Tomas **Racil**, University of Defence, Brno, Czech Republic	
11:30	15:30	Militarization of Police, Violence Against Blacks Counterinsurgency and Information Warfare: Ethical and Anticipated Ethical Issues Richard **Wilson**, Towson University, Towson & Michael **Shifflett**, U. S. Department of Homeland Security, USA	BJA Student Computer and Digital Forensics Educational Opportunities Program: The Assessment of Online Graduate Students Kyung-Shick **Choi**, Chitkushev **Lou**, Boston University and Kyung-Seok **Choo**, Utica College, Claire Seungeun **Lee**, University of Massachusetts Lowell, USA	
11:50	15:50	Mitigating Global Cyber Risk Through Bridging the National Incident Response Capacity Gap Elisabeth **Dubois** and Unal **Tatar**, University at Albany, SUNY, USA (in Peson - Work in Progress Presentation)	Futuer Needs of the Cybersecurity Workforce Connie **Justice**, Char **Sample**, Clay **Hampton**, Purdue School of Engineering and Technology, IUPUI, Indianapolis, Sin Ming **Loo** and Alex **Ball**, Boise State University, Boise, USA	
12:15	16:15	Zoom Room 1 & ETEC 149/151 **Keynote Presentation:** Tony Sager, Senior Vice President & Chief Evangelist, Center for Internet Security *Stranger in a Changed Land*		
12:30	16:30	*Break - Lunch in ETEC Lobby*	*Break - Lunch in ETEC Lobby*	*Break - Lunch in ETEC Lobby*
		Zoom Room 1 & ETEC 149/151 **Stream A: Cyber-Attack** Chair: Vijay Bhuse	Zoom Room 2 & ETEC 105 **Stream B: Mini Track on Cyber Operations in the Global Information Environment** Chair: Stilianos Vidalis	Zoom Room 3 & ETEC 107 **Stream C: PhD Colloquium** Chairs: Omer Keskin & Saltuk Karahan (10 minute presentations with questions and discussion)
13:20	17:20	Advancing cybersecurity capabilities for South African organisations through R&D Zubeida **Khan** and Nenekazi **Mkuzangwe**, Council for Scientific and Industrial Research, Pretoria, South Africa	Protecting Networks with Intelligent Diodes Jason **Dahlstrom**, Web Sensing LLC, USA and Stephen **Taylor**, Dartmouth College, Hanover, USA (In Person Presentation)	Evaluating the Reliability of Android Userland Memory Forensics Sneha **Sudhakaran**, Golden G **Richard** III, Louisiana State University, Baton Rouge, USA, Aisha **Ali-Gombe**, Towson University, USA and Andrew Case, Volexity, USA (PhD In Person Presentation) The Impact of CISO Appointment Announcements on the Market Value of Firms Adrian **Ford**, Ameer **Al-Nemrat**, Seyed Ali **Ghorashi** and Julia **Davidson**, University of East London, UK (PhD) Technical Analysis of Thanos Ransomware Ikuromor **Ogiriki**, Vahid **Heydari** and Christoper **Beck**, Rowan University, Glassboro, USA (Masters) Malware Binary Image Classification Using Convolutional Neural Networks John **Kiger**, Shen-Shyang **Ho**, Vahid **Heydari** and Rowan University, Glassboro, USA (Masters In Person Presentation) Ensuring the Security of Space Systems from Eavesdropping Attacks Caleb **Richardson**, Mark **Reith**, Wayne **Henry**, Air Force Institute of Technology, Fairborn, USA (Masters)
13:40	17:40	Cyber-attack modelling - building a general model Martti **Lehto**, University of Jyväskylä, Finland (In Person Presentation)	On Explainable AI Solutions for Targeting in Cyber Military Operations Clara **Maathuis**, Open University, Heerlen, The Netherlands	
14:00	18:00	The Failure of Trust in Trusted Systems Angela **Mison**, Gareth **Davies** and Pete **Eden** University of South Wales, Caerphilly, UK	Multi-Purpose Cyber Environment for Maritime Sector Gabor **Visky**, Arturs **Lavrenovs**, Erwin Orye, NATO Cooperative Cyber Defence Centre Of Excellence and Dan **Heering**, Olaf **Maennel**, Tallinn University of Technology, Estonia, Kimberly **Tam**, University of Plymouth, UK (In Person Presentation)	
14:20	18:20	Utilising Switch Port Link State to Detecting Rogue Switches Travis **Quitiquit** and Vijay **Bhuse**, Grand Valley State University, Allendale, USA (In Person Presentation)	A New Dawn for Space Security Jordan **Plotnek** and Jill **Slay**, University of South Australia, Adelaide, Australia	
14:40	18:40	*Zoom Room 1: Online Networking in Small Groups for Virtual Participants*		
15:00	19:00	*Close of Conference Day*	*Close of Conference Day*	*Close of Conference Day*
19:00		**Conference Dinner at Jacob and Anthony Italian, Stuyvesant Plaza, 1475 Western Ave, Albany, NY 12203**		

EST	GMT	Friday 18 March 2022		
07:30	11:30	Zoom Room opens for virtual participants		
07:45	11:45	Conference Registration at State University of New York at Albany, USA		
08:00	12:00	Room 1: ETEC 149/151 **Opening Messages**		
08:05	12:05	**Keynote Presentation: Col. Jeffrey Erickson, the director of the Army Cyber Institute.** **Developing the Critical Capabilities Needed to Respond to Cyber Attacks on Modern Cities**		
08:50	12:50	**Introduction to ICCWS 2023**		
09:00	13:00	*Poster Presentations* *Zoom Room 3 & ETEC 107 and in the ETEC Lobby (See final page of programme for details)*		
09:30	13:30	*Conference splits into streams*		
		Zoom Room 1 & ETEC 149/151 **Stream A: Cyber Warfare** Chairs: Michael Hotchkiss	Zoom Room 2 & ETEC 105 **Stream B: Mini Track on Cyber Security Threats in Smart Systems and Innovative Technologies** Chairs: Terri Merz	*Begins after poster session at 10:00(EST)/14:00(GMT)* Zoom Room 3 & ETEC 107 **Stream C: Masters Colloquium** Chair: Omer Keskin & Saltuk Karahan (10 minute presentations with questions and discussion)
09:40	13:40	'Out Beyond Jointery': Developing a Model for Gaming Multi-Domain Warfare Keith **Scott**, De Montfort University, Leicester, UK	Context-Aware Cyber Threat Intelligence Exchange Platform Michael **Motlhabi**, Phumeza **Pantsi**, Bokang **Mangoale**, Rofhiwa **Netshiya** and Samson **Chishiri** CSIR, Pretoria, South Africa	*Virtual Poster Session Continues here*
10:00	14:00	Can Attrition Theory Provide Insight for Cyber Warfare? Stephen **Defibaugh** & Donna **Schaeffer,** Marymount University, Arlington Virginia, USA (In Person Presentation)	Don't Drink the Cyber: Extrapolating the Possibilities of Oldsmar's Water Treatment Cyberattack James **Cervini**, Aviel **Rubin** and Lanier **Watkins**, The Johns Hopkins University, USA	Securing InfiniBand with the Bluefield 2 Data Processing Unit Noah **Diamond**, Scott **Graham**, Air Force Institute of Technology, Gilbert **Clark**, Airforce Research Laboratory, Dayton, Ohio, USA Performance Implications for Multi-Core RISC-V Systems with Dedicated Security Hardware Samuel **Chadwick**, Scott **Graham** and James **Dean**, Air Force Institute of Technology, USA Improving Hardware Security on Talos 2 Architecture Through Boot Image Encryption Calvin **Muramoto**, Stephen **Dunlap** and Scott **Graham** Air Force Institute of Technology, Dayton, USA Analysis of Sexual Abuse of Children Online and CAM Investigations in Finland Johanna **Parviainen** and Jyri **Rajamäki**, Laurea University of Applied Sciences, Espoo, Finland Digital Risk Management: Investigating Human-Factor Security with a Behaviorist Approach Ruan **Pretorius** and Dewald **Blaauw**, Stellenbosch University, South Africa Analysis of Image Thresholding Algorithms for Automated Machine Learning Training Data Generation Tristan **Creek** and Barry Mullins, Air Force Institute of Technology, USA Defending Small Satellites from Malicious Cybersecurity Threat Banks **Lin**, Wayne **Henry** and Richard **Dill**, Air Force Institute of Technology, United States
10:20	14:20	Cyber Warfare, An Existential Crisis Jacob **Oakley**, T2S Solutions, Huntsville, AL, USA	A Modern ICT Network Simulator for Co-Simulations in Smart Grid Applications Fabian **Niehaus**, Bastian **Fraune,** Richard **Sethman** and Giacomo **Gritzan**, FRI, Fakultät Elektrotechnik und Informatik, Bremen, Germany	
10:40	14:40	Cyberwarfare and its effects on Critical Infrastructure Humairaa **Bhaiyat** and Siphesihle **Sithungu**, University of Johannesburg, South Africa	Towards Detection of Selfish Mining Using Machine Learning Matt **Peterson**, Todd **Andel** and Ryan **Benton**, University of South Alabama, Mobile, USA	
11:00	15:00	Assessment of cyber security risks: Maritime automated piloting process Jouni **Pöyhönen** and Martti **Lehto**, University of Jyväskylä, Faculty of Information Technology, Finland (In Person Presentation)	Malware classification: A deep learning approach with Space-filling curves David **Long** and Stephen **O'Shaughnessy**, Technical University Dublin, Ireland (In Person Presentation)	
11:20	15:20	The New Wave Cyber Attacks Angela **Mison**, Gareth **Davies** and Pete **Eden** University of South Wales, Caerphilly, UK	Transient Execution and Side Channel Analysis: a Vulnerability or a Science Experiment? Michael **Shepherd**, Scott **Brookes** and Robert **Denz**, Riverside Research, Lexington, MA, USA (In Person Presentation)	
11:40	15:40	Data Mining for the Security of Cyber Physical Systems Using Deep-Learning methods Bhagawan **Nath**, University of Jyväskylä, Finland, Timo **Hämäläinen**, University of Jyvaskyla and Soundararajan **Ezekiel**, Indiana University of Pennsylvania, USA	Oath Keepers, Domestic Terrorism and Insurgency: Ethical and Anticipated Ethical Issues Richard **Wilson**, Towson University, Towson & Michael **Shifflett**, U. S. Department of Homeland Security, USA	
12:00	16:00	*Break - Lunch in ETEC Lobby*	*Break - Lunch in ETEC Lobby*	*Break - Lunch in ETEC Lobby*

EST	GMT	Zoom Room 1 & ETEC 149/151 **Stream A: Security** Chairs: Martti Lehto	Zoom Room 2 & ETEC 105 **Stream B: Cyber Protection and Regulations** Chairs: Neal Kushwaha	Zoom Room 3 & ETEC 107 **Stream C: Security Issues** Chair: Bruce Watson
13:00	17:00	Analysing the performance of Block-Splitting in LLVM Fingerprinting William **Mahoney**, George **Grispos**, Phil **Sigillito**, Jeff **Smolinski,** University of Nebraska at Omaha, USA and J. Todd **McDonald**, University of Soouth Alabama, USA	An Ontology for Effective Security Incident Management Sabarathinam **Chockalingam**, Institute for Energy Technology, Halden, Norway and Clara Maathuis, Open University of the Netherlands, The Netherlands	Taxonomy of Social Engineering Attacks; A survey of trends and future directions Arianit **Maraj**, Telecom of Kosovo, Republic of Kosovo and William **Butler**, Capitol Technology University, USA
13:20	17:20	Emerging Cyber risk Challenges in maritime transportation Jussi **Simola** and Jouni **Pöyhönen**, University of Jyväskylä, Finland	Bug Bountys: Between New Regulations and Geopolitical Dynamics Jantje **Silomon**, Mischa **Hansel** and Fabiola **Schwarz**, Institute for Peace Research and Security Policy, Hamburg, Germany	Improving Protection Agaisnt Cybersecurity Attacks of Emergency Dispatch Centers Jim **Sweeney** and Vu Tran, Capella University, Bristol, USA
13:40	17:40	A Novel DevSecOps Model for Robust Security in an MQTT Internet of Things. Manasa **Ekoramaradhya** and Christina **Thorpe**, Technological University Dublin (TU Dublin), Ireland	Design and Evaluation of a Cyber Protection Team Planner Work Aid Kristen **Liggett**, Arielle **Stephenson**, Geoffrey **Dobson** and Meghan **Strang**, Air Force Research Laboratory, WPAFB, OH USA	Increasing Industry Profitability and Cyber Hygiene Utilizing Awareness Progression Methods John **Thebarge**, Mark **Reith** and Wayne **Henry**, Air Force Institute of Technology, USA
14:00	18:00	The Development of Cybersecurity Awareness Measurement Model in the Water Sector Bryan S. **Mufor**, Annlizé **Marnewick** and Suné **von Solms**, University of Johannesburg, South Africa	KKK, Hegel and The Alt Right: An Ethical and Anticipated Ethical Analysis Richard **Wilson**, Towson University, Towson, USA	
14:20	18:20	**Room: ETEC 149/151** **Summary of the Conference:** **Awards to the winner of the Best PhD Paper and Best Poster**		
14:30	18:30	*Close of Conference*	*Close of Conference*	*Close of Conference*

Poster Presentations

Posters will be presented in the ETEC Lobby by in person participants and in Zoom Room 3 by Virtual Participants on Friday 18th March at 9:00 EST/13:00 GMT.
Posters are available to view on facebook and in dropbox at any time.

Posters to be displayed in ETEC Lobby throughout the conference, presentations take place during Friday morning coffee break	**Friday: 9:00-10:00 EST/13:00-14:00 GMT** **Zoom Room 3 & ETEC 107** **Stream C: Poster Presntations** **Chair: Jantje Silomon** 5 minute presentation plus 5 minutes for questions
In-Person Posters	**Virtual Posters**
An Exploration on APTs in Biocybersecurity and Cyberbiosecurity Xavier-Lewis **Palmer**, Lucas **Potter** and Saltuk **Karahan**, Old Dominion University, USA (WIP Paper)	Incremental Malware Detection and Classification Using Hidden Markov Models Ran **Liu** and Charles **Nicholas**, University of Maryland, Baltimore County, United States
College Students' Digital Financial Literacy and Payment Fraud Prevention Behavior Yueqi **Li** & Ingrid **Fisher** University at Albany	Benefits of Crowdsourced Penetration Testing: Implementing an Industry Wide Crowdsourced Platform to Strengthen Penetration Testing and Artificial Intelligence Bianca **Pasikhani**, University of Maryland, University College Adelphi, MD, USA
	Cognition: a Goal, a Target, or a Weapon? Clara **Maathuis**, Open University, Heerlen, The Netherlands (Invited Poster)
	OSINT on the Dark Web: Child Abuse Material Investigations Iiro **Lahti** and Jyri **Rajamäki**, Laurea University of Applied Sciences, Espoo, Finland
	"You cannot Hide Behind Your Thoughts: EEG-based Biometric Identification". Christoph **Lipps**, German Research Center for Artificial Intelligence, Kaiserslautern, Germany
	The Big Lie, Disinformation, and Insurgency: Ethical and Anticipatory Ethical Issues Richard **Wilson**, Towson University, Towson, USA
	ISIS and U. S. Domestic Terrorism: A Comparison and Anticipating the Ethical Issues Richard **Wilson**, Towson University, Towson, USA