



## 2024 N3SP SPRING FORUM



Monday, 22 April 2024

hosted at the U.S. Air Force Academy, Arnold Hall Ballroom

The N3SP was established in Fall 2021 as a cooperative effort by the University of Colorado at Boulder, the University of Colorado at Colorado Springs, and the United States Air Force Academy designed to provide an exceptional opportunity for students and faculty from the three campuses to enrich the study of key strategic national security issues. N3SP events have expanded to include other universities in Colorado and organized along three lines of effort:

- Bring together students and faculty from the participating universities to exchange ideas, increase awareness and foster cooperation in national security and strategic studies
- Improve relationships among the partner universities, local military commands and industry in Colorado
- Connect Colorado's experts with others across the country interested in national security research

The Spring Forum provides the opportunity to present faculty and student research on national security in a more traditional academic conference setting either as part of one of the scheduled panels or during the poster session. Panels are chaired by leading scholars and experts from government, think-tanks, other universities, and private industry. The discussion and feedback on presentations at the Spring Forum serves to help researchers refine their work over the summer in preparation for publishing or presenting it at national academic conferences in the coming semester. Participation by undergraduate students is particularly important in order to demonstrate the potential for them to find future careers as thought leaders in national security and strategic studies whether in higher education, private industry, or public service.

The poster session is a "BYOE" (Bring Your Own Easel) event. The standard format is typically 3' x 2'. A small number of easels are available to reserve in advance in the event a school or individual cannot otherwise procure one in order to participate. Send requests to [D@n3sp.org](mailto:D@n3sp.org).

Participation is by invitation only. For further information or to RSVP by 18 April send an e-mail to [staff@n3sp.org](mailto:staff@n3sp.org).

The Forum will not be recorded or live streamed. No controlled unclassified information (CUI) will be presented or discussed.

This event is made possible by a generous gift from the [Anschutz Foundation](#).





**2024 N3SP SPRING FORUM**  
**ARNOLD HALL BALLROOM, U.S. AIR FORCE ACADEMY**

**Monday, 22 April 2024**

**0830 - Welcome**

Jennifer Sobanet, Chancellor, University of Colorado Colorado Springs

**0845-0945 PANEL ONE: THE VICEROY PROGRAM: MODERNIZING CYBER OPERATIONS  
EDUCATION AND TRAINING**

Chair: Shouhuai Xu, Gallogly Chair in Cybersecurity, University of Colorado Colorado Springs

Presenters:

Bryan Hancock, Hanh Nguyen, Olga Karpoyan, Ekzhin Ear, Shouhuai Xu, and Hiram Henderson, "Understanding Russia's Cyber Policies, Strategies, and Doctrines," University of Colorado Colorado Springs

Aaron Wegert, Joshua Muller, Ekzhin Ear, and Shouhuai Xu, "Towards a GPT-driven Automated Cyber Adversary Emulation Platform," University of Colorado Colorado Springs

Logan Zeien, Shawn Emery, Victor Eckert, and Shouhuai Xu, "State of the Art Cryptographic Libraries for Privacy-Preserving Computing," University of Colorado Colorado Springs

Logan Zeien, Caleb Chang, Ekzhin Ear, and Shouhuai Xu, "Characterizing Advanced Persistent Threats Through the Lens of Cyber Attack Flows," University of Colorado Colorado Springs

James Reynolds, Chase Brown, Haadi Jafarian, "Threat Prediction & Forecasting with Neural Networks," University of Colorado Denver

**1000-1100 PANEL TWO: DESIGNING FOR DEFENSE (D4D)**

Chair: Andy Meyer, University of Colorado Boulder

Presenters:

Team REVIAl (Abulkalam Tanvir, Rudolf Hansen, Emma Hopson, Dylan Jones, Jared Osteen, Austin Vera, and Edward Wong) "A novel signals detection and analysis device for battlefield deployment," University of Colorado Boulder

Team VAMPIRE (Brian Ahn, Pranav Vikirtan Dhayanithi, Andrew Kelly, Alec Kinsman, Hari Kumar, and Alex Roland) "In-flight, platform agnostic fuel transfer hardware technology for extended range in contested air space," University of Colorado Boulder.

**1115-1200 LUNCH SERVED**

**1200 KEYNOTE PANEL ADDRESS: A DISCUSSION OF INDUSTRY AND GOVERNMENT PERSPECTIVES ON WORKFORCE DEVELOPMENT & RESEARCH**

Chair: **The Honorable John C. (Chris) Inglis, Visiting Professor, U.S. Air Force and Naval Academies**

Discussants:

Dawn Beyer, Lockheed-Martin  
Matt Dodge, Booz Allen Hamilton  
Seth Harvey, Bluestaq  
Logan Maynard, Stephenson Stellar

**1245-1345 POSTER PRESENTATION SESSION**

- Brandon Collins, Shouhuai Xu, and Philip Brown. Optimal Defense in Networked Flipit Games with Noisy Information,” University of Colorado Colorado Springs
- Designing for Defense Team CULPER (Amey Gokhale, Zachary Goldeberg, Anna Knutar, Ryan Markus, Joshua Paup, Marley Pethica, and Spencer Riley) “Identifying, recruiting, training, and retaining Digital Signal Analysts,” University of Colorado Boulder.
- Israel Demandel, “Responsible Behavior and Space Compliance,” Yale University
- Vicky DeMersseman, “Using Seismic Data to Provide Missile Warning Capabilities,” Yale University
- Ekzhin Ear, Brandon Bailey, and Shouhuai Xu. Towards Principled Risk Scores for Space Cyber Risk Management,” University of Colorado Colorado Springs Grant Nehls, “Space Deterrence and the NATO Alliance,” U.S. Air Force Academy
- Designing for Defense Team Remora (Connor Armstrong, Vincent Bowen, Julian Hollis, Cristina Kuta, and Joey Morgan) “Extending the deployment range of Uncrewed Underwater Vehicles,” University of Colorado Boulder.
- Theodore Longtchi, Rosana Montañez Rodriguez, Kora Gwartney, EkzhinEar, David P. Azari, Christopher P. Kelley, and Shouhuai Xu. Quantifying Psychological Sophistication of Malicious Emails, University of Colorado Colorado Springs
- Ekzhin Ear, Caleb Chang, Jackson Bulter, Juan Mejia, Shouhuai Xu, Haley Echelmeier and Nicole Wells. Characterizing Russia’s Cyber Operations in Ukraine through the Lenses of Cyber Attack TTPs,” University of Colorado Colorado Springs
- Bryan Hancock, Hanh Nguyen, Olga Karpoyan, Ekzhin Ear, Shouhuai Xu, and Hiram Henderson. Understanding Russia’s Cyber Policies, Strategies, and Doctrines, University of Colorado Colorado Springs
- Cameron Makowski and Haadi Jafarian. Network Emulation & Visualization,” University of Colorado Denver
- Shawn Emery and Shouhuai Xu. Quantifying Resilience of Digital Signing Infrastructures,” University of Colorado Colorado Springs
- Aaron Wegert, Joshua Muller, Ekzhin Ear, and Shouhuai Xu. Towards a GPT-driven Automated Cyber Adversary Emulation Platform,” University of Colorado Colorado Springs
- Logan Zien, Shawn Emery, Victor Eckert, and Shouhuai Xu. State of the Art Cryptographic Libraries for Privacy-Preserving Computing.
- Logan Zeien, Caleb Chang, Ekzhin Ear, and Shouhuai Xu. Characterizing Advanced Persistent Threats Through the Lens of Cyber Attack Flows.
- Mark Maldonado, Aaron Wegert, Joshua Muller, Shouhuai Xu, and Chris “Raven” O’Keefe. Quantifying Mission Assurance Utility of Honeypot & LLMs to Cyber Operations,” University of Colorado Colorado Springs

- Jose Remy, Ekzhin Ear, Antonia Feffer, and Shouhuai Xu. Space Cybersecurity: Systematization of Knowledge (SoK) and Future Research Directions.
- Jose Remy, Ekzhin Ear, and Shouhuai Xu. Secure Space Situational Awareness (SSSA),” University of Colorado Colorado Springs
- Qiren Que and Shouhuai Xu. A System for Privacy-Preserving Data Sharing and Computing,” University of Colorado Colorado Springs
- Aaron McKay, Ekzhin Ear, and Shouhuai Xu. A Framework for Fine-Grained Understanding and Analysis of Cyber Attack-Defense Interactions,” University of Colorado Colorado Springs
- James Turner, Shuai Li, and Shouhuai Xu. Jamming-Resistant Communications via Cryptographic Secret Sharing,” University of Colorado Colorado Springs
- Minhajul Alam Rahat. IoT Malware Landscape: Dissection and Detection,” University of Colorado Colorado Springs
- Omolade Ikumapayi. Security Frameworks for Trusted Execution Environments in Automotive Systems,” University of Colorado Colorado Springs
- Vijay Banerjee. Side-Channel Attacks in Embedded Systems, University of Colorado Colorado Springs
- Jordan Scott. Electronic Warfare Threats to Wind Turbines: A Simulation-based Analysis of Coherent Lidar Attacks,” University of Colorado Colorado Springs
- Mahsa Rahimian. Path-Aware Risk Scores for Access Control (PARSAC) by using Software Defined Networking (SDN),” University of Colorado Colorado Springs
- Sourav Purification and Simeon Wuthier. 5G Fake Base Station Detection and Blacklisting,” University of Colorado Colorado Springs
- Arijet Sarker and Simeon Wuthier. Version++: Cryptocurrency Blockchain Handshaking with Software Assurance,” University of Colorado Colorado Springs
- Nazmus Sakib and Simeon Wuthier. Behavior-based Positive Reputation Score for Bitcoin P2P Network,” University of Colorado Colorado Springs
- Ijeoma Olawale, “Mining Software Vulnerability Repositories for Software Supply Chain Security,” University of Colorado Colorado Springs
- James Reynolds, Chase Brown, Haadi Jafarian. Threat Prediction & Forecasting with Neural Networks,” University of Colorado Denver

#### **1400-1500 PANEL THREE: INTERNATIONAL SECURITY AND HOMELAND DEFENSE**

Chair: Ben Gochman, U.S. Northern Command

Presenters:

Riley Callahan, “The Foundations of Civilian Supremacy: Civil-Military Relations during the American Civil War,” Korbel School of International Studies, University of Denver

Lilith Diringer, “Torture and Inhumane Treatment in Egyptian Prisons leads to Radicalization and Terrorism,” Korbel School of International Studies, University of Denver

Elijah Kruger, “NATO Intervention in Kosovo: A Gender Analysis,” Korbel School of International Studies, University of Denver

Olivia Schauls, “Incel Extremism,” Korbel School of International Studies, University of Denver

Patrick Schmidt, “Outbidding with Ontology: Routine, Rebel Justice, and the Competition for Legitimacy,” Korbel School of International Studies, University of Denver

**1515-1615 PANEL FOUR: SPACE SECURITY RESEARCH**

Chair: Maj Sean Allen, US Space Force, Director, Space Domain Awareness Tools, Applications, and Processing (SDA TAP) Laboratory

Presenters:

Grant Nehls, "Space Deterrence and the NATO Alliance," U.S. Air Force Academy

Israel Demandel, "Responsible Behavior and Space Compliance," Yale University

Nathaniel Pimentel, "Commercial Signal Sensing," U.S. Air Force Academy

**1630-1715 PANEL FIVE: EXPLORING FUTURE CONFLICT THROUGH WRITING COMPETITIONS**

Chairs: Sarah Nance, Department of English, U.S. Air Force Academy  
Colonel Michelle Ruehl, U.S. Northern Command

Fiction Competition Award Winners

First place: Sampson McClung

Second place: Taylor Dunn

Third place: Eileen Zhao

Non-Fiction Competition Award Winners

First Place = Max Lasco

Second Place = Alissa Beehler

Third Place = Connor Brezenski

**1730 Closing comments**

**2024 N3SP Forum Speakers**  
(in order of appearance)

**Welcome Address by UCCS Chancellor Jennifer Sobanet**



Dr. Jennifer Sobanet serves as the Chancellor at the University of Colorado Colorado Springs (UCCS). She received her Ed.D. from the University of Colorado Denver and master's degree in international studies from the University of Pennsylvania's Lauder Institute. She also holds an MBA in international financial management from the Wharton School of the University of Pennsylvania.

Sobanet previously served as CU Denver's Executive Vice Chancellor of Administration and Strategy where she led the campus' strategic plan implementation and catalyzed strategic partnerships and innovation while aligning the university's resources to achieve its vision. As Senior Vice Chancellor for Finance and Administration and as Chief Financial Officer, Sobanet led the development of the university's incentive-based budget model.

Before joining CU Denver, Sobanet served as Acting Executive Director and COO of the Colorado Department of Higher Education and served as the Governor's appointee to the Business Experiential Learning Commission.

She has been both the CFO and VP of Finance and Administration at Front Range Community College and held strategy, finance and legislative positions at Colorado State University Global Campus and the Colorado Community College System.

**Keynote Panel led by the Honorable Chris Inglis**



Chris Inglis is a Visiting Professor at both the U.S. Air Force and Naval Academies, a senior advisor to Hakluyt and Company, a member of the AIG and Huntington Bancshares Boards, and a member of the US Department of Navy's Science and Technology Board and of the U.S. Department of Homeland Security Cybersecurity Advisory Council.

From 2021 to 2023 Mr Inglis served in the White House as the inaugural Senate confirmed U.S. National Cyber Director, building on his service as a Commissioner on the U.S. Cyberspace Solarium Commission (2019-2020), eight years as the Deputy Director and Chief Operating Officer of the National Security Agency (2006-2014) and three years as the Special U.S. Liaison to London (2003-2006).

Mr. Inglis holds advanced degrees in engineering and computer science from Columbia University, the Johns Hopkins University, and the George Washington University, and an honorary doctorate from the National Intelligence University. Mr. Inglis' military career includes 30 years of service in the US Air Force and Air National Guard. He retired as a Brigadier General and holds the rating of US Air Force Command Pilot.

## Keynote Panel Members



**Dr. Dawn Beyer** is a Senior Fellow at Lockheed Martin. She is a distinguished cybersecurity expert with over 30 years of experience, having served in various roles at Lockheed Martin over the past 21 years. During this time she has spearheaded several research and development initiatives, including the company's Cyber Resiliency Level (CRL) framework and the recent 2022 Cyber Defense Technology Strategy. Beyer is a retired U.S. Air Force intelligence officer with 24 years of service. She earned her Ph.D., M.S., and B.S. degrees in Information Systems. She maintains a host of certifications, including PMI's PMP, (ISC)2's CISSP and CSSLP, ISACA's CISM, and Six Sigma Black Belt.



**Matt Dodge** is a Senior Associate at Booz Allen Hamilton. He specializes in Cyber Strategy, Cyber Architecture, Strategic Planning, Information Systems Security, Systems Engineering, and the Department of Defense Acquisition Lifecycle. He earned a Master of Business Administration from the University of Florida and a Bachelor of Science in Control Systems Engineering from the United States Naval Academy. He also holds a Graduate Certificate in Innovation Management from University of Colorado Colorado Springs and Graduate Certificate in Cyber Defense Operations from the SANS Technology Institute.



**Dr. Seth Harvey** is the Co-Founder and Chief Executive Officer of Bluestaq, an enterprise software company specializing in secure data management platforms for the Department of Defense and Intelligence Community with contracts in excess of \$300M. Prior to Bluestaq, Dr. Harvey was Vice President of Space Operations for Intelligent Software Solutions, Inc., where he was responsible for its space programs portfolio of over \$100M in new contracts. He also led research and development programs as an Aerospace Engineer at the Air Force Research Laboratory, Space Vehicles Directorate. Additionally, Dr. Harvey serves on the Colorado Workforce Development Council, Colorado Springs Chamber of Commerce and EDC Board of Directors, Pikes Peak Workforce Center Development Board, Colorado Springs Downtown Partnership Board of Directors, and Catalyst Campus Board of Directors.

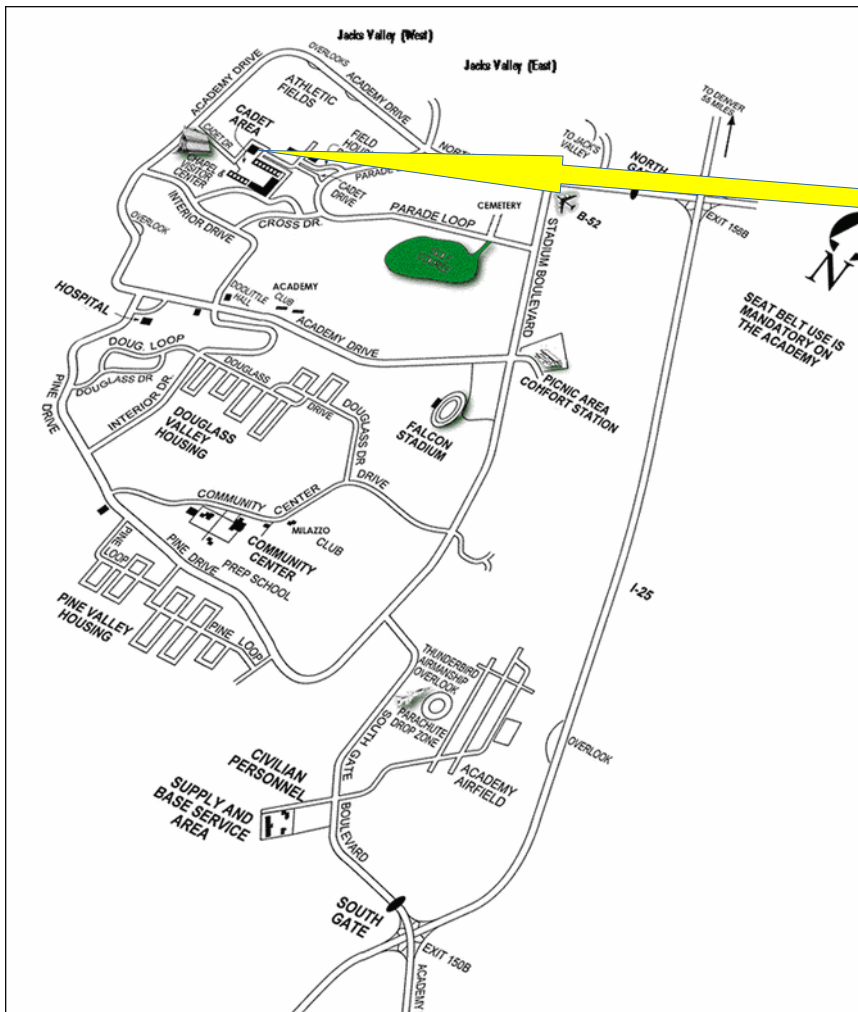


**Logan Maynard** is Principal Engineer for Stephenson Stellar. He has more than twenty years of experience with Department of Defense space activities as well as expertise in applied machine learning (ML) and artificial intelligence (AI).

## Directions for participants

The 2024 N3SP Spring Forum will be held in the Arnold Hall Ballroom at the Air Force Academy. Visitors should enter through the security checkpoint at the North Gate, Exit 156 on Interstate 25. All visitors will be required to stop and show a Department of Defense ID or driver's license to the guards. Non-US citizens are welcome to attend, but are requested to provide their passport number and date of birth prior to arrival.

Once through the North Gate, drive straight (west) on Academy Drive past the B-52 bomber and HH-3 helicopter displays. As you approach the foothills you will climb and then descend into a curve to the south. The mountains. The cadet athletic fields will be on the left as you ascend a hill. At the top of that hill you will find two divided lanes for Cadet Drive on your left. Take a left onto Cadet Drive and then the first left into the west parking lot for Arnold Hall. Parking on the east side is reserved for faculty and staff and cannot be accessed without credentials to open the gates. Enter Arnold Hall through the sets of double doors facing the west and then turn left to the ballroom.



Visitors currently can enter the Academy from 05:30 to 22:00 hours daily. Access to the cadet area including dorms and academic buildings is restricted.

Details regarding driving on base can be found at:

<https://www.usafa.edu/visitors/getting-on-base/>

Be advised you may encounter large wildlife, to include elk and mule deer, while driving on the Academy grounds, particularly during early morning or evening hours. Wild turkeys are also commonly spotted in the area along the roadside. Black bears and mountain lions may be present, but not seen in high traffic zones.