CAL POLY
California Cybersecurity Institute

ANNUAL REPORT
2022-23

OVERVIEW

The following report follows the reporting criteria as required by Cal Poly for approved Campus Centers and Institutes with Academic Affiliation (Academic Senate, March 11, 2014). This report delves into the state of cybersecurity in California, summarizes the institute's activities for the year, provides financial activity, and illustrates how the institute supports faculty and students.

The California Cybersecurity Institute (CCI) brings academic and private sector know-how to bear on today's pressing cybersecurity challenges, including workforce development and applied research.

California Cybersecurity Institute
California Polytechnic State University
San Luis Obispo, California 93407
Office Phone: (805) 756-2011
www.cci.calpoly.edu

California Cybersecurity Institute Annual Report

BILL BRITTON

Vice President for Information Technology Services & CIO
Director, California Cybersecurity Institute

TABLE OF CONTENTS

INTRODUCTION

Message from Director William J. Britton

The Cal Poly California Cybersecurity Institute (CCI) focuses on serious workforce development problems by addressing our state's growing cybersecurity defense challenges. The vision of the CCI is to create a world-class training and education facility dedicated to the complex and emerging cybersecurity challenges facing the United States, the State of California, and Cal Poly. Additionally, the CCI is a focal point for cybersecurity collaboration through strategic relationships with academia, government, and industry.

Through our work, CCI endeavors to build a skilled and innovative cyber workforce capable of navigating today's complex threat landscape. By training a new generation of cybersecurity experts in the latest tools and techniques, this initiative helps to safeguard California's data, computer systems, and critical infrastructure. We will accomplish this across three distinct work streams:

We **Train** to reskill, upskill, and build tech literacy across the State of California and communities around the country; We **Accelerate** unique opportunities to advance the Cal Poly Learn by Doing pedagogy for students and faculty; and we **Empower** early education opportunities to build a pipeline for future students interested in careers in technology.

The impact of our work, regardless of where you are in the workforce, is beneficial. If you are coming to CCI as a secondary school educator or student, we have programs like our Space Grand Challenge that will help you understand the depth of opportunities available in cyberspace. Likewise, if you seek reskilling opportunities around IT or cyber, we have our Cyber Civics and ATP training to help you start your technology journey.

Our work is made possible because of the generosity of our supporters from around the country. Like us, all understand that building a future diverse and day-one-ready workforce requires investments in institutions like the CCI, allowing Cal Poly students to bring to life the experiences and knowledge from the classroom in a professional work setting.

Finally, I would be remiss if I did not mention our gratitude to the host of faculty and students who come to the CCI daily to support our mission. They are the secret sauce that makes everything possible. I invite you to visit our website (http://cci.calpoly.edu) to familiarize yourself with the breadth of our work. I also invite you to subscribe to the monthly CYBER/SPACE newsletter (https://mailchi.mp/calpoly/cyber-space) to stay involved and follow our social media accounts, where we bring the updates directly to you.

With gratitude,

Bill Britton
Vice President, Technology & CIO
Director, California Cybersecurity Institute

MISSION

Executive Summary

The California Cybersecurity Institute (CCI) at California Polytechnic State University (Cal Poly) in San Luis Obispo, California, leads a state and national initiative to address cybersecurity challenges. By bringing together the tech community, government agencies, and educational institutions, the CCI is enhancing cybersecurity defense capabilities at Cal Poly for California and across the nation. We do this through our work focused on three pillars:

Train to reskill, upskill, and build tech literacy across the State of California and communities around the country.

Accelerate unique opportunities to advance the Cal Poly Learn by Doing pedagogy for students and faculty.

Empower early education opportunities to build a pipeline for future students interested in careers in technology.

ASI Chartered Purpose

Educating and empowering well-prepared, socially conscious, and career-ready students to be leaders.

Produce Security Cognizant Graduates: that ultimately create opportunities to ignite social change and create innovative, purposeful cybersecurity solutions no matter their field or work.

Enhance the Growth of the University: through increased research projects, increased desire for enrollment applications, and increased public and private partnerships through the creation of a Center for Security Studies that will have the ability to boldly address a security issue but also transform all the people involved.

Core Values

The following core values guide the operations and management of the California Cybersecurity Institute:

Learn by Doing - Demonstrated by hands-on, student-centered, interdisciplinary education and an approach to continuous improvement in the fields of Cybersecurity.

Excellence - Demonstrated through a collegial community and industry partnerships that pursue responsive scholarship, innovation, leadership, and service.

Knowledge - Demonstrated by scientific integrity responsiveness to the security space, industry, and social needs through a dedication to fostering lifelong learning.

Student Success - Demonstrated by students who are prepared to contribute to the diverse needs of society.

Integrity - Demonstrated by the highest possible ethical standards and accountability for working in cybersecurity.

Passionate Professionalism - Demonstrated by respectful collaboration in collegial, industry, and government communities in the pursuit of excellence in teaching and learning, resulting in meaningful research and scholarship.

BENEFITS TO CAL POLY

Programs

CCI tracks programs in three distinct workflows: Train, Accelerate, and Empower.

TRAIN

CCI aims to continue to provide training to the public and private sectors to help upskill and reskill the workforce to prepare professionals for future careers.

Provided training reaches different audiences, ranging from IT professionals to law enforcement. The increased emphasis on digital literacy and cybersecurity awareness prepares the current and future workforce for advancing careers in technology.

CCI works with outside stakeholders to provide training to professionals as part of its workforce development efforts. As an Authorized Amazon Web Services (AWS) Training Partner, Cal Poly and CCI delivered AWS training to 126 individuals in 2022 through a partnership with ETP and El Camino College.

In partnership with the state of California and the CADENCE and CASCADE programs, CCI provided students from multiple institutions around California with IT and security training.

ACCELERATE

The CCI works on providing unique opportunities to advance the Cal Poly Learn by Doing pedagogy for students and faculty.

During the 2022-2023 fiscal year, 30 students were employed at the CCI as student assistants in various roles ranging from developers to communication specialists. The opportunity for student assistants is to work on programs and projects in partnership with professional staff. Some of the projects the student assistants worked on include:

- Space Grand Challenge (SGC) - October 2022
- Space Grand Challenge Sandbox Series – March 2023
- Space Grand Challenge Redux – May 2023
- Space & Cybersecurity monthly newsletter
- Live stream event production

Furthermore, CCI continues working internally and externally with partners to structure programs that grow student professionalism. Additional student opportunities included professional certifications and training for platforms like Splunk, AWS, Unity, and Fortinet.

Over the last year, CCI has continued to be a thought leader in cybersecurity. In addition to some of our past work, CCI has partnered with the California Advanced Defense Ecosystems & National Consortia Effort (CADENCE) and California Advanced Supply Chain Analysis and Diversification Effort (CASCADE). These initiatives work with a consortium of partners, examining the role of cybersecurity and space within California. Additional student and staff support for these grants was provided

BENEFITS TO CAL POLY

via Cal Poly's Digital Transformation Hub (DxHub) through digital transformation challenges, allowing for increased cross-collaboration and experiential learning for student staff. The Markle Foundation profiled CCI's work and unique approaches in June 2023. Finally, CCI staff continue to support internal and external cybersecurity education and informational events on and off campus. This support has included external presentations to the National Initiative for Cybersecurity Education (NICE), NICE K-12 Conference, California Aerospace Day, California Governor's Military Council, DEFCON, and RSA Cyber Conference and internal presentations to classes, Cal Poly Admissions staff, and on-campus events such as the FortiExpress cyber day held in the College of Engineering's main quad.

EMPOWER

CCI delivers foundational training to middle and high school students from across the globe through its game-based cyber education platform.

Over the last year, CCI focused on empowering early education in cybersecurity through the Space Grand Challenge (SGC) virtual capture the flag game. This cybersecurity competition for middle and high school students involves a complex, fictional cybercrime written and developed by CCI staff and students. Participating teams work to investigate a satellite hacking cybercrime by solving intricate puzzles and challenges using various technical skills, digital forensics, and cybersecurity tools. Student assistants worked closely with a professional Technical Curriculum Developer to develop this competition. In 2023, CCI expanded the number of SGC competitions to increase the opportunities for players to engage with the platform and incorporate practice sessions as requested by participating schools.

For the October 2022 competition, 380 students registered from across six countries, including the United States. Run from the CCI's office at Camp San Luis Obispo, the event garnered in-person participation from Amazon Web Services and the United States Space Force. Also, the event was simultaneously broadcast live on Twitch, generating almost 1000 views. In March 2023, over 160 players registered for the first Sandbox Series practice event, providing an open-play opportunity for teachers, middle and high school students, and college students to engage with and practice using the SGC platform. In May of 2023, CCI hosted the first REDUX competition, providing schools that could not compete in October with another opportunity to play. This event saw another 24 teams and 120 players register to participate in the Space Grand Challenge. The SGC reached over 660 individuals last year, not including social media engagement and live-stream views via Twitch broadcasts. Work is currently underway to prepare for the 2023-2024 game season.

Additionally, the institute's SGC program garnered the attention of the White House Office of the National Cyber Director (ONCD). In October 2022, Paul Totora, then Deputy Assistant National Cyber Director, provided closing competition remarks. Then, in May 2023, Lauryn Williams, ONCD Senior Advisor for Strategy, delivered the competition opening remarks.

BENEFITS TO CAL POLY

Grants

Project Name	Sponsor	Total Fund Amount	Grant Start Date	Grant End Date
Advancement Officer	WILLIAM AND FLORA HEWLETT FOUNDATION	$600,000.00	5/1/21	5/1/25
BATEP-SenseMakers	SENSEMAKERS LLC	$24,653.00	2/1/23	4/27/23
BATEP-SenseMakers	SENSEMAKERS LLC	$26,315.00	2/6/23	4/27/23
CASCADE III	CA GOVERNOR'S OFFICE OF PLANNING & RESEARCH	$25,000.00	5/1/22	6/30/24
CyberSecurity Serv Contract	CA DEPT OF TECHNOLOGY	$280,128.00	4/1/22	6/30/24
CyberSecurity Services Contract	CA DEPT OF TECHNOLOGY	$19,040.00	3/1/22	2/28/23
Fed/State Cyber Prot Team FDN	WILLIAM AND FLORA HEWLETT FOUNDATION	$300,000.00	8/1/20	12/1/23
Focused Internship	DRAGOS, INC.	$64,818.00	1/1/21	12/31/23
GenCyber Space Cybersecurity Camp	NATIONAL SECURITY AGENCY	$99,341.60	4/1/20	3/31/22
Incident Handling Engr	SENSEMAKERS LLC	$18,999.00	1/1/21	10/31/22
Initial Emp Training Contract	CA EMPLOYMENT TRAINING PANEL	$175,890.00	5/18/20	5/17/22
OPR Woody Biomass	CA GOVERNOR'S OFFICE OF PLANNING & RESEARCH	$499,688.00	7/1/22	6/30/24
Operational Support Grant	VERIZON FOUNDATION	$15,000.00	12/17/21	12/31/22
Paso Robles Spacesport	City of Paso Robles	$110,171.00	12/6/22	11/30/23
Robert Half Aman Trng	El Camino Community College	$75,000.00	5/1/22	1/31/23
San Bernardino Innovation 2021	COUNTY OF SAN BERNARDINO	$1,520,028.00	9/14/21	9/13/24
Social Impacts of AI & Adv Tech	New Venture Fund	$89,614.00	1/1/23	4/30/24
Space Commercialization	OFFICE OF PLANNING & RESEARCH (CADENCE)	$308,158.00	9/1/20	8/31/22

BENEFITS TO CAL POLY

Development

Development at the CCI, managed by Kayvan Chinichian, Senior Director of Development, continues to build systems and relationships to foster more philanthropic support. In 2022-2023, a major priority was to revamp how sponsorships were approached for SGC activities. This goal continues with the new SGC cadence, allowing partners to participate with SGC at multiple points in the year.

Development has also prioritized working with individuals and establishing annual fund support from alums, parents, and friends. Development has, for the second year, participated in PolyGives.

This renewed focus on individual support has meant Development has needed to work with the CCI team to recalibrate projects around student support and project needs, which has also meant that Development, with Communications, has put a new emphasis on marketing tools that help stakeholders stay engaged with CCI activities year-round.

Communications

In 2023, CCI partnered with the Cal Poly Corporation to enlist dedicated marketing and communications support. This strategic collaboration empowered CCI to channel its efforts into crafting a cohesive and uniform messaging strategy across all operational domains, encompassing digital platforms, print materials, and presentations.

During the past year, the institute reinvigorated its focus on the monthly Space & Cybersecurity newsletter. This revival involved recruiting fresh student talent to bolster operational capabilities. The newsletter has continued to serve as an informative conduit to keep CCI's stakeholders abreast of ongoing activities and engagements. It also remains a reliable source of updates on space and cybersecurity developments relevant to workforce development, domestic security, international initiatives, and forthcoming events. Notably, the distribution of the newsletter expanded to include a readership of over 600 individuals. Furthermore, CCI is rebranding the newsletter as the 'CYBER/SPACE Newsletter.'

Additionally, CCI actively hosted and participated in webinars and news interviews, covering various topics, such as the CCI's Space Grand Challenge competition, cybersecurity best practices, and career preparation within the technology industry, including hosting a campus-wide webinar on the JourneysMap, a unique tool made available to the Cal Poly community that helps students map out their cyber careers. You can access this and all the other recordings through the CCI YouTube channel.

In 2022, the institute committed to growing its impact and outreach through social media outreach, particularly on the LinkedIn platform. Acquiring more than 1,000 new followers was key to achieving this goal — and the growth trajectory continues. Looking ahead to 2023-2024, CCI remains resolute in its aspiration to significantly grow its social media to help broaden CCI's reach to new partners and alums.

BENEFITS TO CAL POLY

Events

The CCI annually supports Cal Poly students, faculty, and staff attendance at conferences and events throughout the country supporting cybersecurity, workforce development, and education. The CCI participated in 7 conferences this past year, promoting various program initiatives, including the Space Grand Challenge and workforce development. Furthermore, CCI participated in several cyber-related events for the community, state, and Cal Poly students over the last year, including:

- Attended and presented at DEFCON 2022 (August 2022)
- Attended California Aerospace Day (August 2022)
- Presented at California Department of Technology, Cybersecurity Education Summit (October 2022)
- Presented at the William & Flora Hewlett Foundation Cyber Grantees Meeting (November 2022)
- Presented at the 2022 NICE K12 Cybersecurity Education Conference (December 2022)
- Exhibited at the National Security Space Association (NSSA) DISC 2023 (January 2023)
- Presented at Hackathon by the Sea 2023 (January 2023)
- Presented at the Paso Robles CITE (January 2023)
- Presented at the California Council on Science and Technology (CCST) (February 2023)
- Hosted Pacific Gas & Electric Company (PG&E) (February 2023)
- Hosted Fortinet's Fortiexpress at Cal Poly (February 2023)
- Participated in Stanford Space & Security Summit (March 2023)
- Presented at Cal Poly CubeSat Workshop (April 2023)
- Attended RSA 2023 (April 2023)
- Presented to California Governors Military Council (May 2023)
- Presented at Vandenberg Space Force Base Library Talk session (May 2023)
- Presented at NICE Conference (June 2022)
- Presented at GenCyber 2023 (June 2023)

Accomplishments

CCI has had success across its three work verticals for 2022-2023, this includes:

- Employing 30 Cal Poly students as student assistants at the CCI,
- Expanding the SGC to a broader international audience across six countries,
- Expanding the SGC from a single-play game to a multi-play program, reaching 660 players over three events,
- Being invited to present the CCI's programs to multiple state and national organizations,
- Onboarding new staff, including Rob Randle, Technical Project Coordinator, and Henry Danielson, Technical Curriculum Developer
- Participating and publishing work on the California Advanced Defense Ecosystems & National Consortia Effort (CADENCE) and California Advanced Supply Chain Analysis and Diversification Effort (CASCADE) and presenting work to the California Governors Military Council in May 2023.

FINANCIAL ACTIVITY

California Cybersecurity Institute
Statement of Financial Activity
July 1, 2022 - June 30, 2023

Description

Contracts and Grants Funding	$4,251,843.60

Staff Salaries and Benefits	$308,044.00
Student Assistants	$8,730.56
Travel	$10,717.43
Consultants	$267,656.25
Rent	$28,305.94
Supplies and Materials	$10,489.09
Marketing	$30,063.00
Insurance	$0.00

Total Expenses:	$664,006.27

UNIT ORG & MGMT

Organization

The California Cybersecurity Institute highlights the Cal Poly student body's significant contributions to sustaining our operational tempo while intimately involved in their professional development. Our student developers lead the way in our work, and we ensure they are front and center in all our engagements and activities to demonstrate the intellectual prowess and capabilities of the university.

Resources

Operating at Camp San Luis Obispo enhances CCI's training ability. The base offers a secured military environment and multiple training spaces that enable the CCI to conduct various activities. Additionally, the California Central Coast Forensics Lab (CCCFL), located adjacent to the CCI main office, provides a modern forensics facility that Poly's law enforcement officers have actively used to solve cases in our region.

Staff

Henry Danielson serves as Technical Curriculum Developer, supporting training and cyber education development. Rob Randle serves as Technical Project Coordinator, overseeing CCI's student employees and SGC development and operation. Kayvan Chinichian serves as Senior Development Officer, working directly with partners and philanthropic outreach.

Management

Bill Britton serves as Vice President of Technology, CIO, and Director of CCI. Paul Jurasin serves as the Director of New Programs & Digital Transformation Hub (DxHub) and provided oversight to CCI beginning in July 2022 after the resignation of CCI Program Manager Martin Minnich. In October 2022, Dustin DeBrum joined as Operations Director for CCI, New Programs, & Digital Transformation Hub (DxHub). Management meets regularly to discuss the priority of efforts and targets of opportunity, including developing strategic and long-range planning to identify and provide a steady stream of partnerships and projects for the CCI. Paul Jurasin announced his retirement in July 2023 from Cal Poly during the next fiscal year reporting period, effective October 12, 2023.

UNIT ORG & MGMT

Partnerships

The CCI is thankful to all partners and supporters that make our mission possible. Our support came from Local, State, and Federal agencies, private industry, nonprofits/foundations, and individuals.

Local, State, and Federal Agencies

- Air Force Research Labs (AFRL)
- California Department of Technology (CDT)
- California Employment Training Panel (ETP)
- California Military Department, California National Guard
- California State University
- County of San Bernardino
- Governor's Office of Planning and Research, State of California
- National Guard Bureau
- National Security Agency
- United States Space Force (USSF)

Industry Partners

- Amazon Web Services
- Crowdstrike
- Fortinet
- LMNTRIX
- Lockheed Martin Corporation
- Mile2
- Secureworks
- Splunk

Nonprofit Partners

- Aerospace Village
- Cal Poly Corporation
- Cal Poly Foundation
- Foundation for the Future
- National Security Space Association
- William and Flora Hewlett Foundation

Individual Supporters

- Delta Bunuan | Glendale, CA
- Kayvan Chinichian | Woodbridge, VA
- Peter Gallagher | Oakton, VA
- Eric Jontz | Winter Park, FL
- Robert M. Woodson | Roseville, CA

To learn more about partnership opportunities with the CCI, please contact Kayvan Chinichian, Senior Director of Development, at kchinich@calpoly.edu.

FUTURE STATE

Future Projects & Opportunities

For the 2023-2024 fiscal year, CCI will look to grow the size and scope of SGC. This goal includes increasing the number of events and creating more opportunities for small gameplay, leveraging existing platform functionality. To accomplish this goal, CCI is leveraging its in-house AWS knowledge via the DxHub and will engage external partners to aid in developing an improved and modular game platform. Through Development, CCI will also prioritize establishing an advisory board for SGC for the first time, intending to help professionalize program offerings and raise revenue.

In coordination with Cal Poly College of Engineering (CENG), the CCI is working to launch the Cleared for Success (CFS) program within the next fiscal year. CFS prepares students to work in secure environments on day one, helping them understand expectations and the type of work they can expect in government/industry. This program will include a secure facility and feature new training programs to aid students in understanding secure public and private sector job opportunities. CFS is an expansion of existing campus partnerships with the Air Force Research Lab (AFRL) and the United States Space Force.

The CCI will continue to offer various learning opportunities for students, with a curriculum that can evolve based on the identified needs of Cal Poly, affiliated state agencies, and the California Military Department (CMD). Furthermore, CCI is working with the California Department of Technology (CDT) and the Employment Training Panel (ETP) to identify future training opportunities to support both state and local workforce development within cybersecurity.

Participation in the California Advanced Defense Ecosystems & National Consortia Effort (CADENCE) and California Advanced Supply Chain Analysis and Diversification Effort (CASCADE) will continue into 2023-2024. The CCI's efforts on these two DoD programs, managed by the California Office of Planning and Research (OPR), have aided Cal Poly in making connections with federal, state, and regional partners and have driven innovation and student experiential learning opportunities through engagements with the DxHub, including projects supporting the United States Space Force.

Summary

During the past year, Cal Poly CCI has participated in various lines of effort that further its mission and continue to serve as a resource for university audiences, the state, national workforce, and outside organizations to improve cybersecurity skills and protect individuals and organizations from cyberattacks. The institute focuses on addressing the cybersecurity defense and workforce shortage across the state and upskilling students and professionals in underserved communities nationwide. In the coming year, the CCI will continue to focus on critical initiatives through its train, accelerate, and empower efforts. The CCI will continuously emphasize student participation at the forefront of everything we do. By continuing to expand our efforts and reach a wider audience with the help of Cal Poly staff and students, the CCI expects to build strong partnerships, provide resources to students and professionals, and impact the workforce and cybersecurity space for several years to come.

To learn more about the CCI, visit our website: https://cci.calpoly.edu/