



## Journey of Exploration

Eng's area of civil engineering, geospatial engineering, is very specialized, with about seven to 10 graduates from CPP each year. It involves mapping, collecting and analyzing geographic data. Eng knew she had an interest in engineering from her experience with science projects in middle school at Southlands Christian and athletic extracurriculars with iPoly High School. It helped her become

more diligent and committed.

She also pursued a minor in computer information systems (CIS) to cultivate her tech skills. She has worked as a student assistant for seven academic terms in the Division of Information Technology (IT) on campus and as a teaching assistant in the CIS department for four terms.

CIS Professor Ruth Guthrie says Eng is well organized and a problem solver.

"She was the most outspoken and participatory student you could ever imagine, and she brought everyone along with her," Guthrie says. "She lightened the mood in the class. It's amazing how much she has on her plate, and she does it all so well."

Civil Engineering Professor **Allan Ng** affectionately refers to Eng as his "niece" and has taught her in four classes and two labs. Diligent and hardworking, Eng has grown and matured as a student and person over the past four years, Ng says.

"She is very persistent to the point where she is stubborn," Ng says. "Her tenacity is something I notice. Whatever class project or research she is doing, she will get it done."

Eng, who will be pursuing a graduate degree in geomatics engineering at Oregon State University, served as treasurer of the Institute of Transportation Engineers where she had opportunity to present research in several professional conferences. The college journey has all been about the experiences and space to learn, grow and lead.

"When I look back at college, I want to remember the chance I had to contribute meaningfully to this university that provided me with an opportunity to become a better person," she says.

# Making SWIFT Work of the Competition

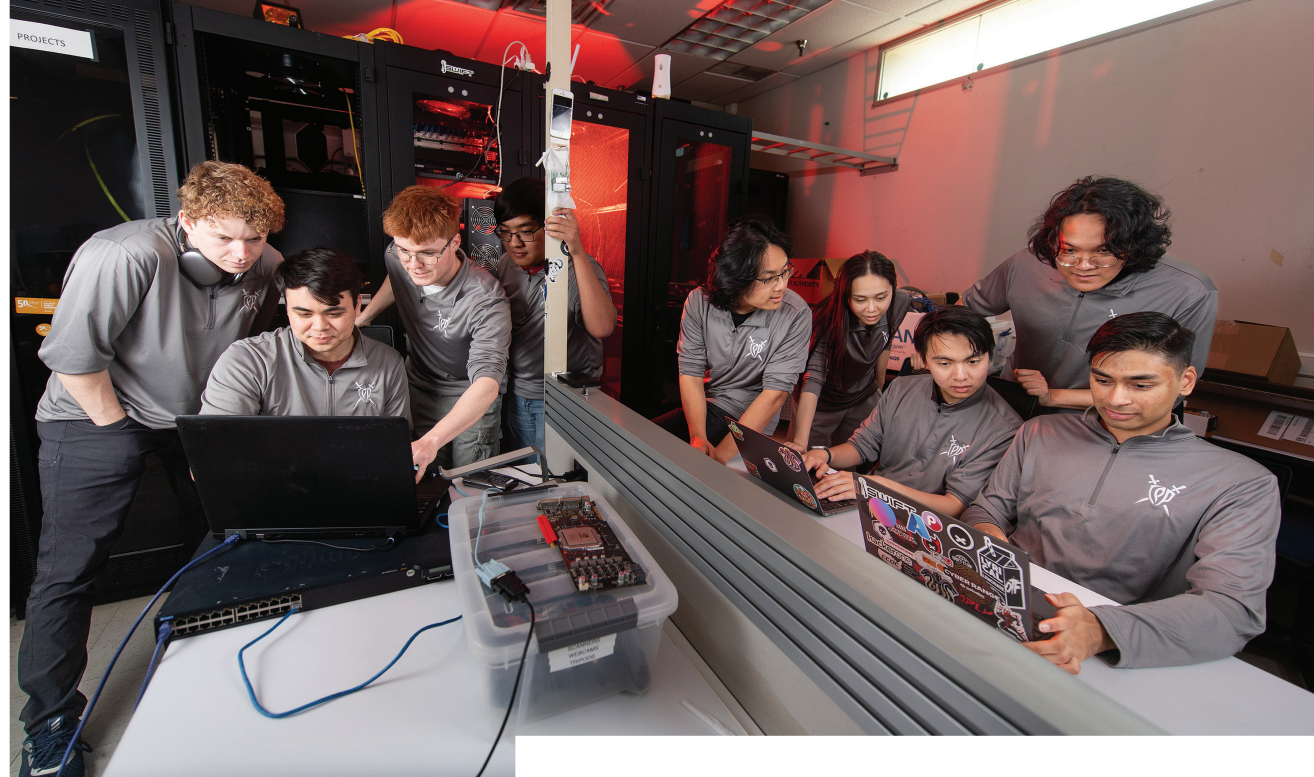
By **MICHAEL LANDERS**

By the end of 2024, the cost of cyberattacks on the global economy could surpass \$10.5 trillion, according to Forbes Magazine. Industries such as finance and hospitality have grappled with these crimes, and cyberattacks are also impacting supply chain management, local cities and school districts. Cybercrime Magazine reports that "60 percent of small companies go out of business within six months of falling victim to a data breach or cyberattack," so it's no wonder that cybersecurity is one of the top concerns in the global business sector and geopolitical landscape.

Through competitions, research opportunities and faculty leadership, Cal Poly Pomona is preparing students to meet the increasing demands of this crucial industry. The university is entering its third decade of designation as a **Center of Academic Excellence in Cyber Defense** by the National Security Agency, Department of Homeland Security and Central Security Service.

In addition, the university's programs reach out to high school students, creating a much-needed pipeline to college and industry.

"Cyber is a STEM (Science, Technology, Engineering and Math) field and there are great opportunities for employment in technical, non-technical or mixed environments. Cal Poly Pomona cybersecurity students mentor each other, train every weekend, and are often recruited by major firms and government agencies while they're still in school. Many have high-paying jobs waiting for them after graduation," says **Ron Pike**, director of the **California Center for Cyber Risk** and professor of computer information systems.



## Ahead of the Competition

Pike and Curtis Carpenter, adjunct faculty member and interim director of advanced computing, have expanded learning opportunities to include competitions, research, club activities, and networking with corporate partners, alumni, and peers. Students in the College of Business Administration, College of Engineering and College of Science have benefited from the polytechnic experiences.

Programs like these continue to grow, thanks in part to a generous \$12.5 million donation from Distinguished Alumni **David Singelyn** ('84, computer information systems and accounting) and **Ruth Singelyn** ('84, computer information systems) to the Singelyn Graduate School of Business. In addition, **Kathy Tully**, also a Distinguished Alumna ('80, MBA) and one of Barron's Top 100 Women Financial Advisors, sponsored students' travel to the competitions.

At national and international competitions, student teams implement the skills they learn in the classroom. Depending on the competition challenge, they may act as the aggressor, exploiting system weaknesses and mining data from organizations. Other times, they wear the white hats and try to identify and fend off cyberattacks. One competition challenge saw the Cal Poly Pomona team protecting sensitive customer and vendor information in the hacking of a fictitious bank merger, while another challenge saw the teams identifying system vulnerabilities and technical improvements to the executives of a fictitious hotel company.

CPP won first place at the 2023 Collegiate Penetration Testing Competition and second at the 2023 National Collegiate Cyber Defense Competition (CCDC).

"The hands-on experience you get from a competition like CCDC is not something you get in the classroom," says **Karina Rivera**, a CIS senior. "We learn to work under pressure, solve complex problems, and collaborate with others in a stressful time-constrained environment."

## From Competitions to Community

Part of the university's success in cyber competitions is rooted in a supportive community within campus clubs and outreach activities.

"I didn't know I wanted to pursue cybersecurity until my second year of college. I was looking for clubs to be involved in on campus, and I came across SWIFT, one of the largest cybersecurity clubs at CPP," Rivera says. "As I became more involved, my passion for it only grew more, and I knew I wanted to pursue this as my career."

Rivera is now a cyber defense analyst at **Avanade** and she is one of the many trainers to CPP and high school students through SWIFT (Students with an Interest in the Future of Technology), a premier cyber club on campus that develops and trains cyber teams for regional, national and global competitions.

Many SWIFT members also volunteer for CPP's **CyberPatriot** program, which aims to create a clear pathway for middle and high school students to learn about cybersecurity, participate in competitions, go to college, graduate, and immediately find jobs in industry and government. Workshops and summer bootcamps at schools in the San Gabriel Valley and Inland Empire encourage kids to explore cybersecurity and related career paths. This effort has proven successful in drawing participation from students of all backgrounds and has spurred growing diversity among the cyber teams at Cal Poly Pomona.

CyberPatriot is a national program that alumna **Diane Miller** ('81, information systems) led when she was the director of Global Cyber Education and Workforce Development at **Northrop Grumman**. Miller has been actively engaged with Cal Poly Pomona's cybersecurity program for decades, supporting creation of the student-run cyber operations center, speaking to students about cyber careers, launching the collaboration with CyberPatriot, and representing Cal Poly Pomona cyber as the Executive-in-Residence for Cybersecurity.

"It's an honor to collaborate with the brilliant cyber students at Cal Poly Pomona, especially as I've seen them drawn into the field through CyberPatriot," Miller says.

That's certainly the case for recent graduate **Gabriel Fok**, who started his cyber journey in high school and now works as an information systems security engineer at **Boeing**.

"I first learned about cybersecurity in high school through CyberPatriot," says Fok ('23, computer science). "While the technical aspect brought me, I've stayed for the community. Ever since my second year of high school, I've been teaching others who stood where I once stood, and now I am coming up on my seventh year of mentoring in cybersecurity – and I still don't see any sign of stopping."

## Competition Highlights

1<sup>st</sup> place

2022 and 2023 Collegiate Penetration Testing Competition (CPTC)

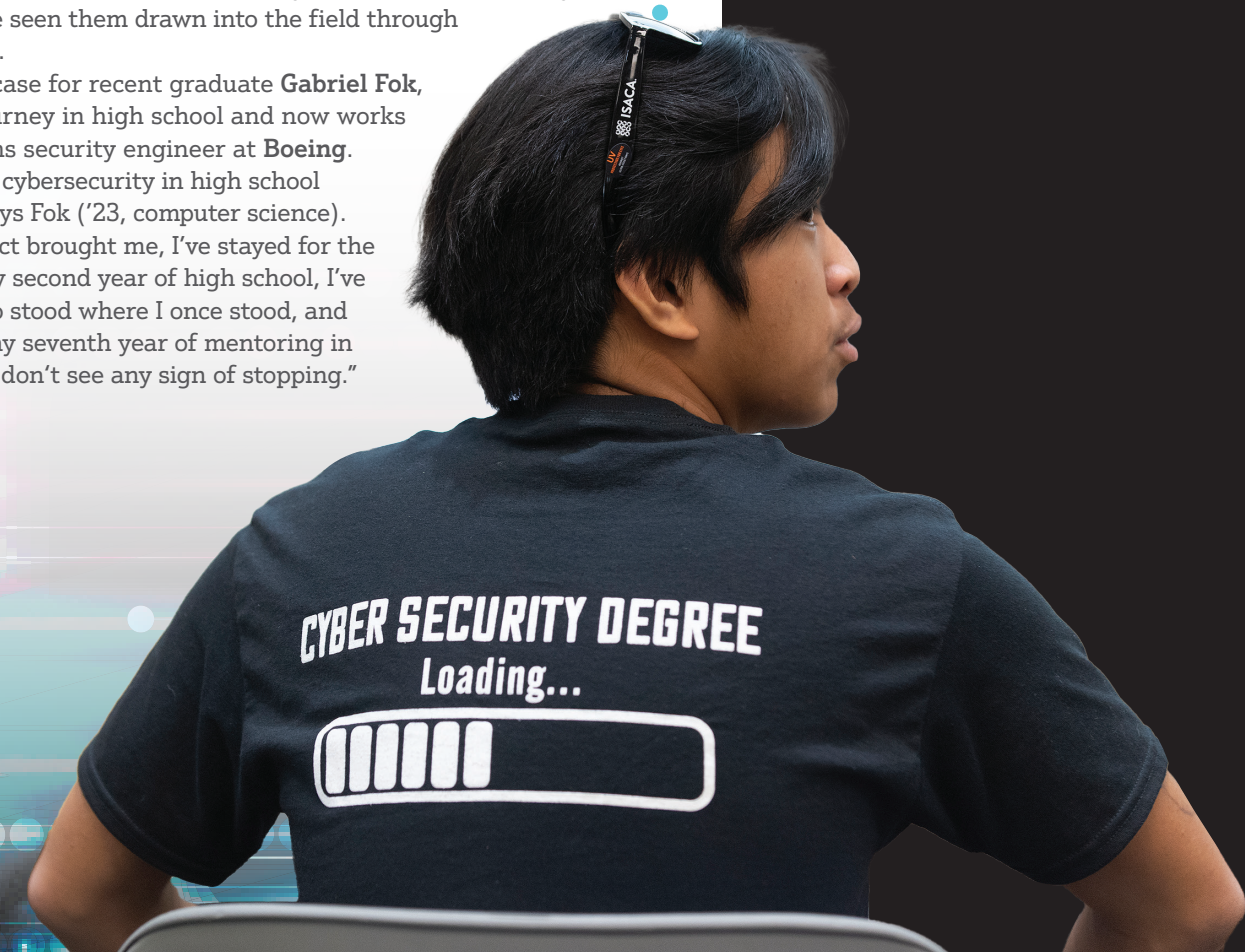
Highest score in CPTC history, 2023

2<sup>nd</sup> place

2023 National Collegiate Cyber Defense Competition

1<sup>st</sup> place

2023 National Centers of Academic Excellence, Western Region





alumni

# LICENSE TO CLEAN

ENGINEERING ALUMNUS  
**RAMY GINDI**  
 OVERSEES INNOVATIVE OCEAN CLEANUP

By MELANIE JOHNSON

For the past two years, residents in Marina del Rey have spotted a vessel emblazoned with the number 007 gliding across Ballona Creek.

It's a fitting number for the vessel, which is on a mission to keep trash out of the Pacific Ocean. **Ramy Gindi** ('98, civil engineering), principal engineer at Los Angeles County Public Works, oversees the **Ballona Creek Trash Interceptor** project, a two-year pilot to help keep the waterways free of debris.

Since October 2022, the interceptor has collected more than 124 tons of trash – from construction railings to wooden pallets to more than 50,000 plastic bottles. A floating boom system placed in the creek funnels the trash into the vessel's mouth and a conveyor belt siphons the trash into the interceptor.

"Our education campaign has been working well, however we are still seeing trash get into the flood control channels and ending up on our beaches," Gindi says. "We thought it was time to start thinking about new and innovative solutions. The county decided to work with a company out of the Netherlands."

That company is **The Ocean Cleanup**, a nonprofit organization focused on developing technologies to rid oceans worldwide of plastic. Under the direction of the Los Angeles County Board of Supervisors, the county formed a public-private partnership with Ocean Cleanup to pilot the trash interceptor in Ballona Creek.

"It's groundbreaking technology, but also eye opening in the amount of trash we let go out into the ocean. We can do better," he says.

## BUILDING A CAREER

The Ballona Creek interceptor is just one of the many projects Gindi oversees at Public Works, where he has worked for 26 years. He started with Public Works as an intern between his junior and senior years at Cal Poly Pomona. He stayed on after graduation, working on water resources-related projects such as drinking water, wells, tanks, pipelines and pump stations.

Gindi later transitioned to reviewing the design of projects, overseeing 80 engineers and architects working on projects varying from bridges to roadways to water infrastructure for flood control. The Public Works department, which has around 3,600 employees, is responsible for planning, designing, building and maintaining public infrastructure across the county.

"Working for a public agency gives you the opportunity to serve the public," he says. "Being able to listen

to residents and learn about neighborhoods gives us the opportunity to better serve the community. To me, that's what public service is all about, being able to give back to the community."

Gindi, who also has a master's in civil engineering from Cal State Long Beach, credits his accountant father and high school teacher mother with influencing him to forge a career in public service.

He also lauds Cal Poly Pomona for giving him a solid educational foundation on which he could build a career. The hands-on opportunities allowed Gindi to apply technical applications to real-world problems, but it wasn't just the engineering classes he found beneficial.

"Cal Poly Pomona gave me a well-rounded education," he says. "You're not just a civil engineer. From your English classes to chemistry classes to mechanical engineering and computer science classes, you learn. It allows you to be well rounded enough to know that you need to continue to learn throughout your career. At Cal Poly Pomona, you learn how to learn."

WATCH A VIDEO  
 See the Ballona Creek Trash interceptor in action

