

# SCALE STUDENT NEWSLETTER

Issue 2, April 2024



## SCALE

Scalable Asymmetric Lifecycle Engagement

Developing the U.S. Defense Microelectronics Workforce

[scalestudentsupport@purdue.edu](mailto:scalestudentsupport@purdue.edu)



## CONGRATULATIONS, SCALE CLASS OF 2024!

Right: Mairely Urias, an Electrical and Electronics Engineering major from Arizona State University, graduated in December 2023. She now works for Microchip Technology, Inc. Photo Credit: Mairely Urias



Left: Christopher Grillo, an Electrical and Computer Engineering major from Binghamton University, graduates in May 2024. He will start graduate school at Binghamton in the fall. Photo Credit: Christopher Grillo

### GRADUATION SEASON AND SUMMER APPROACH

BY GABRIELLA TORRES

The themes of this issue are graduation and summer. Nelson Mandela wrote, "education is the most powerful weapon which you can use to change the world." We are proud of all of our graduating SCALE undergraduate and graduate students and wish them the best in their future endeavors. We look forward to seeing how they change the world of microelectronics, semiconductors, and national defense! If you're graduating, please stay in touch with us through the LinkedIn group mentioned below. We also hope that all SCALE students taking part in summer classes, internships, and research positions have wonderful and successful experiences!

### SCALE GRADUATION PROGRAM RECOGNIZES SECOND COHORT

BY MATT PUNG

The SCALE Graduation Program was established in Fall 2023 to recognize graduating SCALE students for their hard-earned accomplishments. The program grew threefold from 13 students in Fall 2023 to 49 students in Spring 2024. To participate in the program, students complete the graduation survey in the same semester of their graduation. The brief survey asks about students' post-graduation plans and interest in joining the SCALE Alumni Network. After completing the survey, students receive graduation recognition items, which include a \$30 Amazon gift card and a SCALE graduation stole or plaque. The SCALE Alumni LinkedIn page (found in our [Linktree](#)) is a great way to stay connected to SCALE alumni, industry and government partners, and current students. This graduation program is an incredible opportunity to be recognized for your work as a SCALE student and celebrate your graduation.



## SCALE AMBASSADORS

BY SATISH PATEL

We're thrilled to shine a spotlight on our first cohort of SCALE ambassadors. All of our exceptional SCALE Ambassadors have recently been honored with a well-deserved award of \$500 not only for their contributions to SCALE, but also for representing the program. Nominated by the esteemed faculty and staff of SCALE, they have all consistently exemplified dedication and excellence in their roles, going above and beyond to contribute positively to the SCALE community.

Their commitment to excellence and willingness to go the extra mile have not only earned them this recognition but have also inspired those around them. Their passion for the mission of SCALE is evident in their daily actions, whether it's through mentoring fellow students, organizing impactful events, or representing SCALE with enthusiasm and integrity.

A special shoutout goes to Aiden Jacobsen, one of our exceptional SCALE Ambassadors, who has created a compelling video showcasing the invaluable experience that SCALE offers. Through Aiden's lens, viewers get an intimate look at the impact SCALE has on its participants, highlighting the skills and knowledge they gain that extend far beyond the classroom. His creativity and passion for the program shine through in the video, serving as a powerful testament to the transformative potential of SCALE. Check out [his video](#), which is listed on YouTube Shorts.

## SPRING 2024 SCALE AMBASSADORS:

We are pleased to announce the first SCALE Ambassadors, presented in alphabetical order:

1. Aiden Jacobsen, Purdue University
2. Andrew Robertson, Purdue University
3. Benjamin Sloan, St. Louis University
4. Benjamin Burson, Purdue University
5. Charles Bowles, Purdue University
6. Caleb Kirby, Indiana University
7. Caleb Suhy, Purdue University
8. Drew Payne, Purdue University
9. Evelyn Marx, Vanderbilt University
10. Frank Huang, Purdue University
11. Hana Wong, Purdue University
12. Hannah Pike, Purdue University
13. Isabella Wynocker, Vanderbilt University
14. Joey Lopez, Purdue University
15. Kate Mealey, Notre Dame University
16. Madeline Yang, Purdue University
17. Malcolm McClymont, Purdue University
18. Mary Grace Golden, Purdue University
19. Mary Vaughan, Purdue University
20. Nicholas Pieper, Vanderbilt University
21. Thomas Munson, Purdue University
22. Yoni Xiong, Purdue University
23. Zachary Au, Purdue University
24. Zachary Goode, Arizona State University
25. Zachary Wilkinson, Indiana University



Above: Evelyn Marx presents her research at Vanderbilt's ECE Day. Photo credit: Evelyn Marx

## STUDENT SPOTLIGHT: EVELYN MARX, SCALE RH, VANDERBILT UNIVERSITY

BY ALEX TAURIAINEN

Evelyn Marx is a rising senior in electrical engineering at Vanderbilt University, focused on radiation hardening of semiconductors in the defense industry. After graduation, she will work for the U.S. Missile Defense Agency through her U.S. Department of Defense SMART Scholarship.

Through SCALE, Evelyn has pursued multiple research opportunities, including work on a Laboratory Radiation Test Training Simulator, as well as broader research on microelectronics workforce development programs. Evelyn has been awarded Vanderbilt University's Best Undergraduate Poster for two consecutive years for her SCALE-related research. One of Evelyn's SCALE mentors is Dr. Mike Alles.

Evelyn's advice for incoming SCALE students is that the benefits you receive from SCALE are proportional to the effort you put in and that students should make an effort to get highly involved and be proactive in SCALE programs and research. Additionally, Evelyn hopes to mentor and inspire young women to get involved in semiconductor research and the defense industry.

## PI SPOTLIGHT: DR. MIKE ALLES, VANDERBILT UNIVERSITY

BY ALEX TAURIAINEN

Dr. Michael Alles serves at the Vanderbilt SCALE PI, leading the Radiation-Hardening Technical vertical. Dr. Alles received his Ph.D. (12/92), M.S. (8/90), and B.S. (5/87) degrees in Electrical Engineering from Vanderbilt University. Dr. Alles is a Research Professor of Electrical Engineering, and the Acting Director of the Vanderbilt Institute for Space and Defense Electronics (ISDE). Prior to returning to Vanderbilt to join ISDE in 2003, he spent 12 years in the semiconductor industry working in silicon-in-insulator (SOI) technology development, manufacturing, metrology, computer aided design tools for semiconductor fabrication processes, semiconductor device physics, and integrated circuit design. In addition to his technical expertise, Dr. Alles has business and program management experience including having participated in 2 public offerings. His current research focuses on the application of advanced and emerging semiconductor technologies in radiation environments, and modeling and simulation of radiation effects in semiconductor devices and circuits. Dr. Alles is a member of IEEE EDS and NPSS, and has over 250 publications and 2 patents.

Dr. Alles' advice to SCALE students is that "career paths rarely involve only a single employer anymore; recent news about various cutbacks and layoffs highlights the importance of being well-connected in a network like SCALE." When asked about Evelyn Marx, his SCALE student mentee, Dr. Alles said, "Evelyn's work with Purdue in the definition of the KSAs for Rad-Hard verticals was an early success as one of the first cross-institutional efforts under SCALE. Evelyn has continued to be an ambassador for the program including recruiting multiple additional students into the program at Vanderbilt, and participating in workforce development projects such as Lab RaTTS."

Below: Dr. Mike Alles is a SCALE Radiation Hardening PI at Vanderbilt University. Photo credit: Dr. Mike Alles



## SCALE JOBS & INTERNSHIPS

BY PARKER SANTO-DOMINGO

The summer offers many opportunities when it comes to jobs and internships. Here are SCALE's tips & tricks to land your dream internship:

- **Apply, Apply, Apply.** Even if you don't fulfill every requirement on a job posting, it is still worth it to submit an application.
- **Establish relationships.** There are many opportunities at all universities to interact with recruiters & companies. It is important to build these relationships early for future opportunities.
- If you are interested in DoD/government jobs, **begin networking early** to gain security clearances. These processes can take a long time but give you a huge advantage for future jobs. Alternatively, some organizations will hire you to work on non-classified projects until you finish the security clearance process.

Please reach out to SCALE's Work Experience Lead, Chris Sowers (csowers@purdue.edu) with job or internship questions.



Above: A student works in Birck Nanotechnology Center. Photo credit: Purdue Marketing and Communications

## SCALE SUMMER PROGRAMS

BY GABRIELLA TORRES

Three of SCALE's universities will soon launch Summer 2024 undergraduate research programs: Indiana University, Purdue University, and Vanderbilt University. Students will have the opportunity to perform research in the TAI, HI-AP, RH, and SoC technical-vertical areas. The programs last 8-10 weeks and often culminate with student poster presentations. We wish our summer students the best of luck in their projects. Interested in participating next year? Check our [Linktree](#) to find the Summer Research section on nanohUB.

## SK HYNIX TO BUILD

### SEMICONDUCTOR PLANT AT PURDUE

BY PARKER SANTO-DOMINGO

A \$4 billion semiconductor packaging facility will be completed in West Lafayette by 2028, marking a significant milestone for both the local community and the broader semiconductor industry. According to the Wall Street Journal, SK Hynix, a leading South Korean memory chip manufacturer, chose Indiana over Arizona as the site for its facility, citing the availability of skilled engineers from Purdue University as a key factor. This decision not only underscores the importance of talent but also presents a wealth of opportunities for students pursuing degrees in semiconductor and microelectronics engineering. The facility is expected to create between 800 to 1,000 new jobs in the region and SCALE hopes to provide programs that allow students to develop expertise in the industry, giving students opportunities to learn about the field. Please see the [Linktree](#) for a news article with more details.

Photo credit: Blog.SK.com



## PURDUE UNIVERSITY HOSTS CHIPS SUMMIT

BY GABRIELLA TORRES

[Edited version of the Purdue University News Release]

On April 17, 2024, Purdue University hosted the second annual CHIPS for America: Execute for Global Success Summit in Washington, D.C. The co-host organizations included SEMI, Semiconductor Industry Association, Semiconductor Research Corp., and Global Semiconductor Alliance. Over 330 representatives from industry, government and academia gathered in hybrid format to discuss America's future innovation in microelectronics and the need for a national semiconductor workforce. Keynote speakers included SK Hynix CEO Kwak Non-Jung, who shared his excitement about the upcoming SK Hynix packaging facility in West Lafayette and its role in developing the Silicon Heartland in the Midwest. Arati Prabhakar, the top science and technology policy advisor to the White House, said, "This is what happens when we decide to get serious here in America. When that happens, and we build in America, we strengthen our supply chain of chips. We strengthen our national security; we strengthen global stability and create good jobs that support families, the kinds of jobs that change people's lives." Other speakers included the NSF Directorate for Engineering, the assistant secretary for the Bureau of Economic and Business Affairs, and the director of policy and integration in the CHIPS R&D Office. For the full Purdue University news article, please see our [Linktree](#).

Below: Purdue University President Mung Chiang and U.S. Sen. Todd Young of Indiana speak at the second CHIPS Summit. Photo credit: Purdue University News



## SCALE STUDENTS ATTEND CHIPS SUMMIT

BY ERICA CORBEELS

Joseph (Joey) Lopez, a Purdue senior in electrical engineering, and Caleb Suhy, a Purdue sophomore in electrical engineering and physics, attended the CHIPS summit and spoke to us about the event. Here are the highlights:

- Both noted the active participation of SK Hynix, the world's sixth-largest semiconductor manufacturer. The students thought that they were an impressive presence at the summit.
- Joey was able to network with 10 company representatives from a multitude of organizations like SK Hynix, SRC, Northrup Grumman, ARI, and more. Caleb was able to network with representatives from EFabless, IBM, and IMEC.
- While attending the conference's panels, the Workforce Development panel stood out the most to Joey. Caleb enjoyed the fireside chat with Senator Young and Purdue President Chiang.
- Joey's most memorable experience from the summit was "...being able to introduce Dr. Arati Prabhakar, the Director of the White House Office of Science and Technology Policy (OSTP) and assistant to the President for Science and Technology." He stated that the experience helped him better understand the relationship between legislation and the microelectronics industry.
- Caleb's most memorable experience from the conference was meeting Indiana Senator Todd Young, and photographing Washington DC in between panels.
- Both students recommended the conference to all SCALE students; Joey wrote that the CHIPS Summit was a "once-in-a-lifetime opportunity for students desiring network opportunities, professional development, semiconductor strategic initiatives, and more. I highly recommend this opportunity and encourage students to come with lots of energy and awareness of the highly ambitious attendees."
- Caleb summarized the event by saying that it was "valuable [to] learn about how partnerships between industry, academia, and government are formed and maintained, and it's a good networking opportunity."

## OUR TEAM

- Gabriella Torres, SCALE Student Experiences Lead, [gmtorres@purdue.edu](mailto:gmtorres@purdue.edu)
- Erica Corbeels, SCALE Writer & Purdue Student, [ecorbeel@purdue.edu](mailto:ecorbeel@purdue.edu)
- Parker Santo Domingo, SCALE HI-AP & GA Tech Student, [psantodomingo2024@gatech.edu](mailto:psantodomingo2024@gatech.edu)
- Alex Tauriainen, SCALE SoC & Purdue Student, [atauria@purdue.edu](mailto:atauria@purdue.edu)
- Satish Patel, SCALE HI-AP & Purdue Student, [pate1903@purdue.edu](mailto:pate1903@purdue.edu)
- Matthew Pung, SCALE SoC & Purdue Student, [mpung@purdue.edu](mailto:mpung@purdue.edu)

## GET INVOLVED

Please use our Social Media Request Form (in the [Linktree](#) ) to:

- Nominate a student, faculty member, or government/industry partner for upcoming spotlights
- Share your SCALE stories and accomplishments
- Request stories or content about a specific topic
- Express your interest in joining our newsletter team

## LEARN MORE

Check out our [LinkTree](#) to find the resources mentioned in this newsletter.



## STAY IN TOUCH WITH SCALE OVER THE SUMMER!

BY ERICA CORBEELS

Got a summer internship and want to find other SCALE students at your company? Have questions about moving to a new city or state for the summer? Look no further than the newest addition to the SCALE Discord server: the **Summer Experience** channel! This new channel will allow current SCALE students to share their summer plans, connect with other SCALE students, and ask their most pressing questions about summer internships and research opportunities. Build a community while furthering your career by connecting with the Summer Experience channel in the SCALE Discord! Not in the Discord? Check out the official SCALE [Linktree](#) to get connected.

## SUMMER ACTIVITY: MICRO- ELECTRONICS SECURITY TRAINING (MEST) CENTER WEBINAR SEMINAR SERIES

BY AMY JOO

Looking for a way to enhance your professional development over the summer? Look no further than the MEST Center Webinar Series, available online on nanoHUB! These webinars cover a wide range of security topics, including devices, architectures, integrated circuits, platforms, and large systems.

Each webinar features a one-hour presentation by a subject matter expert, followed by a brief Q&A session. To get the most out of your learning experience, it's encouraged to complete the associated pre and post-learning experience surveys for each webinar. To access the webinars, make sure you are logged in to your nanoHUB account, then visit the MEST Center Webinar Series page and click the blue "Enroll" button near the bottom right corner.