

Project Stories

HBCU ENGINEERING PROGRAMS USE MITRE ATT&CK TO BOOST CYBER DEFENSE CURRICULUM

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Topics: Cybersecurity, Education and Training, Partnerships, Cyber Threat Intelligence, Threat-informed Defense

Investing in technical instruction at Historically Black Colleges and Universities gives STEM students a competitive edge. MITRE continues our work supporting these institutions and their efforts to increase representation in tech.

MITRE's partnership with Advancing Minorities' Interest in Engineering (AMIE) is bringing the MITRE ATT&CK® cyber defense framework to Historically Black Colleges and Universities (HBCUs). It's a big step toward providing students with the latest in real-world techniques to battle a real-world threat.



MITRE developed ATT&CK, an open-source, free framework, to help organizations protect against cyber attacks by understanding known threat-actor behavior. Using this framework, MITRE built another tool, CALDERA™, which allows users to automate and emulate attacks to a network based on user-configured threats. CALDERA can then test defenses against those attacks.

ATT&CK and CALDERA are usually deployed in companies, not classrooms. We're changing that.

Collaborating with HBCUs on Cyber Education

MITRE's Ann-Marie France, an expert in business process innovation, led the program that brought ATT&CK/CALDERA workshops for students to AMIE's attention. AMIE represents a coalition of industry, government agencies, and the Accreditation Board for Engineering and Technology (ABET)-accredited HBCU

Schools of Engineering.

France partnered with the ATT&CK team to deliver the ATT&CK/CALDERA workshops because of the impact that MITRE's prominence in cyber defense could have preparing HBCU students for real-world cyber threats.

Claude Turner, associate professor and chair of Norfolk State University's Department of Computer Science, participated with students in one of the ATT&CK/CALDERA workshops. He says when a company like MITRE comes in, it gives students an extra edge.

"This workshop exposes students to real-world cyber threats and threat-hunting techniques, making them—and the university's curriculum—more competitive," Turner says.

Stephanie Turner, vice president, inclusion, diversity, and social innovation, says this is exactly the type of impact MITRE hopes to have in the HBCU community.

"Collaborating with organizations like AMIE to bring MITRE's technical know-how to the next generation of HBCU engineers is a key strategy in our social innovation efforts," she says.

Building a Pipeline of Technical Experts

AMIE Executive Director Veronica Nelson says her organization's goal is to implement and support programs that attract, educate, graduate, and place underrepresented students in engineering and computer science careers.

"Many people don't realize that the 15 ABET-accredited HBCU Schools of Engineering produce over 30 percent of African-American engineering talent in the U.S.," Nelson says. "That's why our corporate and government partners are so important in our efforts to enhance curriculum and develop STEM talent."

Steve Luke, director of MITRE Engenuity's ATT&CK Defender, which produces free educational videos and offers a subscription to certification exams around ATT&CK and its applications, is working with others at MITRE to gain support for what he calls the "pipeline to employment" to identify and support outreach to HBCUs and the University of Puerto Rico.

"If we support promising students interested in threat-informed defense, by the

time they graduate they really know MITRE, we know their capabilities, and we've influenced their education," Luke says.

And though the workshops started with colleges, they're now having an impact with government agencies that use CALDERA.

"Some of our sponsors had been experimenting with CALDERA on their own," Luke says. "After we ran the workshops, the techniques really clicked. Now, we're developing a more intensive program for sponsors."

Workshops Develop Curriculum, Build STEM Talent

Andy Applebaum, a lead cybersecurity engineer at MITRE, delivered the original pitch to AMIE and coordinated technical delivery for the ATT&CK/CALDERA workshops with attendees ranging from undergraduates to professors.

"Showcasing MITRE's approach to cyber defense gives us the opportunity to teach students about threat-informed defense and help professors design curriculum. So, when those students enter the workforce, they understand what modern cyber defense looks like," he says.

After the initial ATT&CK/CALDERA workshops, France says, "MITRE is looking for new ways to expose HBCU engineering students to leading cyber practices not typically taught in classrooms."

—by *Aishia Caryn Freeman*

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