SEI Bulletin

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SEI Researchers Talk Large Language Models for Cybersecurity

August 14, 2024—Large language models (LLMs) have impacted many digital domains, but how do they apply to cybersecurity? In a recent SEI Podcast, Jeff Gennari and Sam Perl, researchers in the SEI's CERT Division, discussed applications of LLMs and generative AI in cybersecurity, how to evaluate those applications, and the potential challenges.

"Every problem that we have in cybersecurity...can be impacted by large language models," said Gennari in the podcast Evaluating Large Language Models for Cybersecurity Tasks: Challenges and Best Practices. "The space is also changing how we think about cybersecurity. The attack surface of our systems is changing when they have Al components."

"Machine learning has been used in cybersecurity quite extensively," said Perl. "We are talking about much more advanced sort of techniques in those areas and what will come next and how will it be used."

<u>Listen to the podcast »</u>



<u>SEI Launches Course on Developing a National or Government Computer</u> <u>Security Incident Response Team</u>

The new course is intended to help nations develop robust cybersecurity capabilities.

Ozkaya Explores Generative AI in Software Architecture During International Conference Keynote

The IEEE International Conference on Software Architecture is the premier event for the field's researchers and practitioners.

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<u>Weaknesses and Vulnerabilities in Modern Al: Al Risk, Cyber Risk, and Planning for Test and Evaluation</u>

Bill Scherlis explores strategies for framing test and evaluation practices based on a holistic approach to AI risk.

<u>Weaknesses and Vulnerabilities in Modern Al: Integrity, Confidentiality, and</u> Governance

Bill Scherlis explores Al risk through the lens of confidentiality, governance, and integrity.

<u>Weaknesses and Vulnerabilities in Modern AI: Why Security and Safety Are</u> <u>so Challenging</u>

Bill Scherlis explores concepts of security and safety for neural-network-based AI, including ML and generative AI, as well as AI-specific challenges in developing safe and secure systems.

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<u>Evaluating Large Language Models for Cybersecurity Tasks: Challenges and</u> Best Practices

Jeff Gennari and Sam Perl discuss applications for LLMs in cybersecurity, potential challenges, and recommendations for evaluating LLMs.

<u>Capability-Based Planning for Early-Stage Software Development</u>

Bill Nichols and Anandi Hira introduce capability-based planning (CBP) and its use and application in software acquisition.

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Generative AI and Software Engineering Education

SEI experts in software engineering discuss how generative AI is influencing software engineering education.

Secure Systems Don't Happen by Accident

Timothy A. Chick discusses how security is an integral aspect of the entire software lifecycle.



On the Design, Development, and Testing of Modern APIs

This white paper discusses the design, desired qualities, development, testing, support, and security of modern application programming interfaces (APIs).

<u>A Model Problem for Assurance Research: An Autonomous Humanitarian Mission Scenario</u>

This report describes a model problem to support research in large-scale assurance.

<u>Application Programming Interface (API) Vulnerabilities and Risks</u>

This report describes 11 common vulnerabilities and 3 risks related to application programming interfaces and provides suggestions about how to fix or reduce their impact.

See more publications »



Webcast - <u>Embracing AI: Unlocking Scalability and Transformation Through</u> <u>Generative Text, Imagery, and Synthetic Audio</u>, August 27

In this free webcast, Tyler Brooks, Shannon Gallagher, and Dominic Ross aim to illustrate Al's transformative power in achieving scalability, adapting to changing landscapes, and driving digital innovation.

<u>DevSecOps Days Washington D.C. 2024</u>, September 18

This free, in-person event in Arlington, Virginia, will teach how to integrate security into DevOps practices and transform DevSecOps journeys.

International Conference on Conceptual Modeling (ER 2024), October 28-31 The SEI will host the main international forum for discussing the state of the art, emerging issues, and future challenges in research and practice on conceptual modeling.

See more events »



Upcoming Appearances

<u>Emerging Technologies for Defense Conference & Exhibition 2024</u>, August 7-9

Visit the SEI at booth 316.

Billington CyberSecurity Summit, September 3-6

Hear the SEI's Greg Touhill, Mark Sherman, and Nathan VanHoudnos at the leading government cybersecurity summit, and visit the SEI at booth 320.

TechNet Indo-Pacific 2024, October 22-24

Visit the SEI at booth 1411.

<u>27th Annual Systems & Mission Engineering Conference</u>, October 28-31 Visit the SEI booth at this event.

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Insider Risk Management: Measures of Effectiveness

October 29-31 (SEI Live Online)

<u>Risk Program Development - Governance and Appetite Workshop</u>

November 13-14 (SEI Arlington, Va.)

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