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Human-AI collaboration in cybersecurity: Designing trustworthy copilots for threat Intelligence

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As cyber threats grow in complexity, scale, and automation, the traditional human-centric model of cybersecurity is no longer sufficient. The modern Security Operations Center (SOC) faces millions of alerts, evolving threat actors, and data that moves faster than human cognition. Artificial Intelligence (AI) has emerged not merely as an automation layer, but as a collaborative partner—a copilot capable of amplifying human expertise, accelerating analysis, and uncovering hidden threat patterns.

This keynote explores the emerging paradigm of Human-AI Collaboration in Cybersecurity, where AI systems and analysts operate as integrated teammates. Instead of replacing human judgment, AI copilots act as cognitive amplifiers—interpreting telemetry, correlating threat intelligence, and visualizing complex attack surfaces through adaptive, explainable interfaces. The goal: enable analysts to focus on strategic decision-making rather than mechanical triage.

The session introduces design principles for trustworthy AI copilots, grounded in three pillars:

1. Transparency and Explainability – ensuring that AI-driven recommendations are interpretable, auditable, and contextually aligned with security workflows.
2. Adaptive Learning and Feedback – creating continuous learning loops where human feedback improves AI accuracy, and AI insights refine human intuition.
3. Cognitive Ergonomics – designing visual and interactive systems that translate abstract threat models (MITRE ATT&CK matrices, kill chains, lateral movement graphs) into intuitive, real-time visual intelligence.

Drawing on case studies from modern enterprise defense environments, the talk highlights how AI-augmented SOCs are reshaping threat detection, incident response, and knowledge transfer. It also discusses the ethical and governance challenges of deploying semi-autonomous AI in high-stakes environments—emphasizing accountability, bias mitigation, and human oversight.

Ultimately, this keynote envisions a future where cybersecurity operations are not manned by humans or machines, but by collaborative intelligence systems—where human insight and machine precision co-evolve to outpace adversaries.

Biography

Mona Rajhans is a Senior Engineering Manager at Palo Alto Networks - The world's biggest cyber security company, based in Santa Clara. She is leading innovation at the intersection of cybersecurity and intelligent user interfaces. She develops AI-powered defense platforms that transform static dashboards into adaptive, real-time intelligence surfaces. With expertise in large-scale architecture, agentic AI, and front-end performance, she has pioneered advances in AI-assisted analyst workflows, contextual copilots, and secure human-AI collaboration. Passionate about innovation with impact, Mona champions the paradigm of "UI as a defensive surface," where interface intelligence becomes a core layer of cyber resilience, while mentoring emerging engineering leaders. She contributes to the research community through program and technical committee service and as a keynote speaker at major conferences worldwide.