Former Amazon Robotics Engineer Highlights Need for Unified Safety Frameworks in Autonomous Systems

Industry assessor cites growing fragmentation of responsibility across autonomy technology stacks

Jherrod Thomas, former Amazon Robotics engineer and functional safety expert.

ATLANTA , GA, UNITED STATES, January 2, 2026 /EINPresswire.com/ -- As autonomous systems continue to increase in complexity, responsibility for functional safety is becoming increasingly fragmented across the technology stack, according to Jherrod Thomas, a former Amazon robotics engineer and an NVIDIA functional safety assessor.

Drawing on his experience assessing safety-critical platforms used in autonomous vehicles and robotics, Thomas observes that many organizations involved in autonomy operate with differing interpretations of functional safety. Automakers, software developers, system integrators, and silicon providers often optimize within their own domains without a shared, end-to-end safety framework that clearly defines responsibility across the full system lifecycle.

In his current role evaluating advanced compute platforms, artificial intelligence acceleration, and integrated software ecosystems, Thomas reviews how hardware, perception systems, and software pipelines are combined and validated for real-world deployment. This work provides a cross-industry view of how safety assumptions formed at one layer of a system can propagate downstream as platforms evolve through updates, retraining, and operational changes.

Modern autonomous systems are composed of independently developed components, including perception algorithms, neural networks, high-performance computing, vehicle control systems, and continuous deployment pipelines. While individual components may meet applicable standards, the overall system can lack a unified safety case that documents ownership, assumptions, and accountability as the system changes over time.

As a Certified Functional Safety Expert and Certified Machine Safety Expert, and as a participant in UL technical committees and multiple ISO working groups, he has spent more than two decades working at the intersection of engineering practice and safety standards. His work also includes reviewing advanced patents, including research originating from NASA, and contributing to the development and interpretation of evolving safety frameworks.

Based on this experience, he argues that the next phase of autonomy requires safety cases that remain active and continuously maintained, rather than static documents tied to a single certification milestone. As systems change through software updates and machine learning optimization, safety assumptions must be reviewed and documented to prevent gaps in accountability.

According to his analysis, failures in autonomous systems are more likely to emerge at the boundaries between teams, tools, and assumptions than within individual components themselves. Without a shared safety language and coordinated responsibility, risks can accumulate even when each subsystem appears compliant in isolation.

By emphasizing unified and continuously maintained safety frameworks, he encourages the industry to approach functional safety as an ongoing, system-wide responsibility that evolves alongside autonomous technology.

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