Taking Self-Driving Vehicles to New Heights: Breakthrough Tool “PASS” Pushes the Boundaries of Autonomous Vehicle Robustness

The new product, Platform for Autonomous Driving Security and Safety (PASS), takes center stage in increasing the security and safety of autonomous driving systems. By addressing the critical need for rigorous test scenarios, PASS emerges as the comprehensive testing platform that ensures enhanced safety and security. Bid farewell to safety risks and embrace a secure future of autonomy with PASS!

Irvine, California (June 2, 2023): UCI based research group AutonomousGuard has introduced “PASS”, an enhanced autonomous testing platform designed to empower autonomous driving solutions. With over 300 reported accidents involving autonomous systems in recent years, comprehensive research and rigorous testing are essential before deploying AD software on physical vehicles. PASS fills this critical gap by providing a robust testing platform, allowing researchers to evaluate their algorithms under diverse real-world scenarios. By analyzing and simulating critical situations, PASS aims to enhance the safety and performance of autonomous driving systems, contributing to the advancement of this evolving industry.

This cutting-edge testing platform holds the promise of expediting research, enhancing safety measures, and propelling progress in autonomous vehicle technology. A professor at UCI, renowned for pioneering research in AD security systems, expressed the significance of PASS, stating, “The all-encompassing testing framework offered by PASS represents a significant advancement for the AD research community. It enables users to evaluate the performance of autonomous driving systems under a myriad of challenging conditions, augmenting our understanding and facilitating the development of more dependable software.”

Pallavi Garg, Chief Technical Officer at AutonomousGuard, emphasized the team's objective with PASS, stating, “Our aim is to provide the AD industry with a robust testing platform that ensures the safety and efficiency of autonomous driving systems. Furthermore, discussions are underway with the Department of Motor Vehicle (DMV) to incorporate PASS as the initial test in the process of granting licenses to self-driving vehicles.” This collaboration highlights the potential influence of
PASS in establishing industry standards and fostering wider acceptance of autonomous driving solutions.

PASS incorporates **built-in attack pipelines** that modify the real-world environment to simulate attacks, allowing thorough testing of autonomous driving (AD) systems under such conditions. The AD system is evaluated based on its performance in the face of these simulated attacks. One example, as illustrated in the accompanying image, showcases a stop sign with graffiti that poses a challenge for detection algorithms, highlighting the complexity of real-world scenarios that PASS can simulate for comprehensive testing.

Equipped with a powerful **metric calculation tool**, PASS utilizes advanced technologies such as Machine Learning, Computer Vision, and various perception algorithms to generate accurate insights. These insights enable autonomous driving solutions to make well-informed decisions quickly. Additionally, this component of the platform serves as a valuable benchmarking tool, allowing other Level 4 autonomous driving solutions to be seamlessly integrated and compared within the PASS framework.

The initiative has garnered substantial attention and created a buzz within the autonomous industry. Team AutonomousGuard is thrilled to showcase PASS at the upcoming Capstone Projects Showcase on **Thursday, June 15th**, taking place at the Beckman Center in Irvine. This event will provide an opportunity to demonstrate the capabilities and innovation behind PASS to industry professionals, researchers, and stakeholders.

**About AutonomousGuard:**
AutonomousGuard is a dynamic research group specializing in autonomous driving technology. Founded in 2022 and headquartered in Irvine, California, the team comprises highly skilled individuals with diverse backgrounds and extensive experience in software development. With their expertise and passion for innovation, AutonomousGuard is dedicated to advancing the field of autonomous driving through cutting-edge research and the development of groundbreaking solutions.

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