Methods For Spatio-Temporal Scene-Graph Embedding For Autonomous Vehicle Applications

Tech ID: 34210 / UC Case 2022-933-0

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BRIEF DESCRIPTION

A revolutionary approach to enhancing the safety and efficiency of autonomous vehicles through advanced scene-graph embeddings.

FULL DESCRIPTION

This technology introduces a novel spatio-temporal scene-graph embedding methodology designed to improve the safety and reliability of Autonomous Driving Systems (ADS). By accurately modeling the complex and dynamic relationships between objects in a driving scene, this approach enables more precise risk assessments and collision predictions, making autonomous navigation safer in urban environments.

SUGGESTED USES

· Autonomous vehicle navigation and safety systems.

· Real-time traffic monitoring and management solutions.

· Advanced driver-assistance systems (ADAS) for consumer vehicles.

ADVANTAGES

· Enhanced collision prediction accuracy and earlier detection of potential accidents.

· Significant reduction in model size and energy use making it ideal for edge computing on autonomous vehicles.

· Improved ability to transfer knowledge from synthetic to real-world driving datasets, enhancing model generalization.

· Superior explainability of decision-making processes through detailed scene-graph representations.

OTHER INFORMATION

CATEGORIZED AS

» **Computer**
   » Software
» **Sensors & Instrumentation**
   » Position sensors
» **Transportation**
   » Automotive

RELATED CASES

2022-933-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12406583	09/02/2025	2022-933

RELATED MATERIALS

» Yu, S.-Y., et al. Al Faruque, M. A. (2022). Scene-Graph Augmented Data-Driven Risk Assessment of Autonomous Vehicle Decisions. IEEE Trans. Intell. Transp. Syst, 23 (7)

» Malawade, A. V, et al. Al Faruque, M. A. (2022). Spatiotemporal Scene-Graph Embedding for Autonomous Vehicle Collision Prediction. IEEE Internet Things J., 9 (12)

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» Yu, S.-Y., et al. Al Faruque, M. A. (2022). Scene-Graph Augmented Data-Driven Risk Assessment of Autonomous Vehicle Decisions. IEEE Trans. Intell. Transp. Syst, 23 (7)

» Malawade, A. V, et al. Al Faruque, M. A. (2022). Spatiotemporal Scene-Graph Embedding for Autonomous Vehicle Collision Prediction. IEEE Internet Things J., 9 (12)