

World Model Based Distributed Learning for AI Agents in Autonomous Vehicles

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ABSTRACT

Researchers at the University of California, Davis have developed an approach to enhance autonomous vehicle path prediction through efficient information sharing and distributed learning among AI agents.

FULL DESCRIPTION

This technology introduces an innovative method of generating vehicle path predictions by leveraging lightweight information sharing between autonomous vehicles. It utilizes a combination of sensory data and waypoint data from multiple vehicles, processed through advanced encoding and decoding techniques, to improve the accuracy of trajectory predictions in a high-dimensional environment. This approach addresses the challenges of partial observability and non-stationarity in autonomous vehicle systems by enabling more informed decision-making processes.

APPLICATIONS

- ▶ Autonomous vehicle navigation and route optimization.
- ▶ Multi-agent systems in transportation and logistics.
- ▶ Real-time traffic management and control systems.
- ▶ Advanced driver-assistance systems (ADAS) for predictive vehicle control.

FEATURES/BENEFITS

- ▶ Enhances route planning accuracy through distributed learning and information sharing.
- ▶ Reduces communication overhead despite the high-dimensional decision-making environment.
- ▶ Improves system performance and safety due to more accurate and timely predictions.
- ▶ The system scales in processing sensory and waypoint data from multiple vehicles.
- ▶ Addresses insufficient information and poor prediction issues in autonomous vehicle route planning.
- ▶ Resolves complications in decision-making processes due to rapidly changing driving behaviors and traffic conditions.
- ▶ Mitigates prohibitive communication overhead and computational demands in high-dimensional environments.

PATENT STATUS

Patent Pending

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OTHER INFORMATION

KEYWORDS

autonomous vehicles,
distributed learning,
information sharing,
multi-agent decision-
making, path prediction,
reinforcement learning,
route planning, sensory
data, traffic
management, waypoint
data

CATEGORIZED AS

- ▶ **Computer**
- ▶ **Software**
- ▶ **Sensors & Instrumentation**
- ▶ **Analytical**

- ▶ **Transportation**
- ▶ Automotive
- ▶ **Engineering**
- ▶ Robotics and Automation

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