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(31) Priority Document No	:NA	(72) Name of Inventor :
(32) Priority Date	:NA	1)Dr. ARUN KUMAR TRIPATHI
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(57) Abstract :

The invention relates to a multi-sensor fusion model for autonomous vehicle navigation systems that integrates LiDAR (101), radar (102), camera (103), GPS (104), and IMU (105) through a centralized fusion engine (106). The system processes heterogeneous sensor data to enhance localization, mapping, obstacle detection, and decision-making. A decision-making module (107) generates navigation strategies executed by a vehicle control unit (108). The invention ensures robustness, adaptability, and scalability across diverse environmental conditions, making it highly suitable for real-world autonomous vehicle applications.

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