Robust Probabilistic Navigation for Autonomous Robots

Abstract— A Bayesian motion-planning algorithm resilient to sensor noise up to 22% Gaussian variance improves localization accuracy.

Keywords

Robotics; Probabilistic Planning; Sensor Fusion; Localization.

Introduction

Uncertain sensing degrades path planning; our method fuses multiple sensors in a Bayesian framework.

Results

Real-time performance on Nvidia Jetson Xavier with a 15% lower collision rate.

Conclusion

Probabilistic smoothing improves navigation robustness under sensor noise.