

## Graduated Fidelity Lattices for Motion Planning under Uncertainty

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**Abstract** In this work we present a state lattice based approach for motion planning in mobile robotics. Sensing and motion uncertainty are managed at planning time to obtain safe and optimal paths. To do this reliably, our approach estimates the probability of collision taking into account the robot shape and the uncertainty in heading. We also introduce a novel graduated fidelity approach and a multi-resolution heuristic which adapt to the obstacles in the map, improving the planning efficiency while maintaining its performance. Results for different environments, shapes and motion models are reported, including experiments with real robots.

### LIGAZÓNS

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