

## FY23 Strategic University Research Partnership (SURP)

# Uncertainty-aware and semantics-cognizant safe exploration of unknown environments

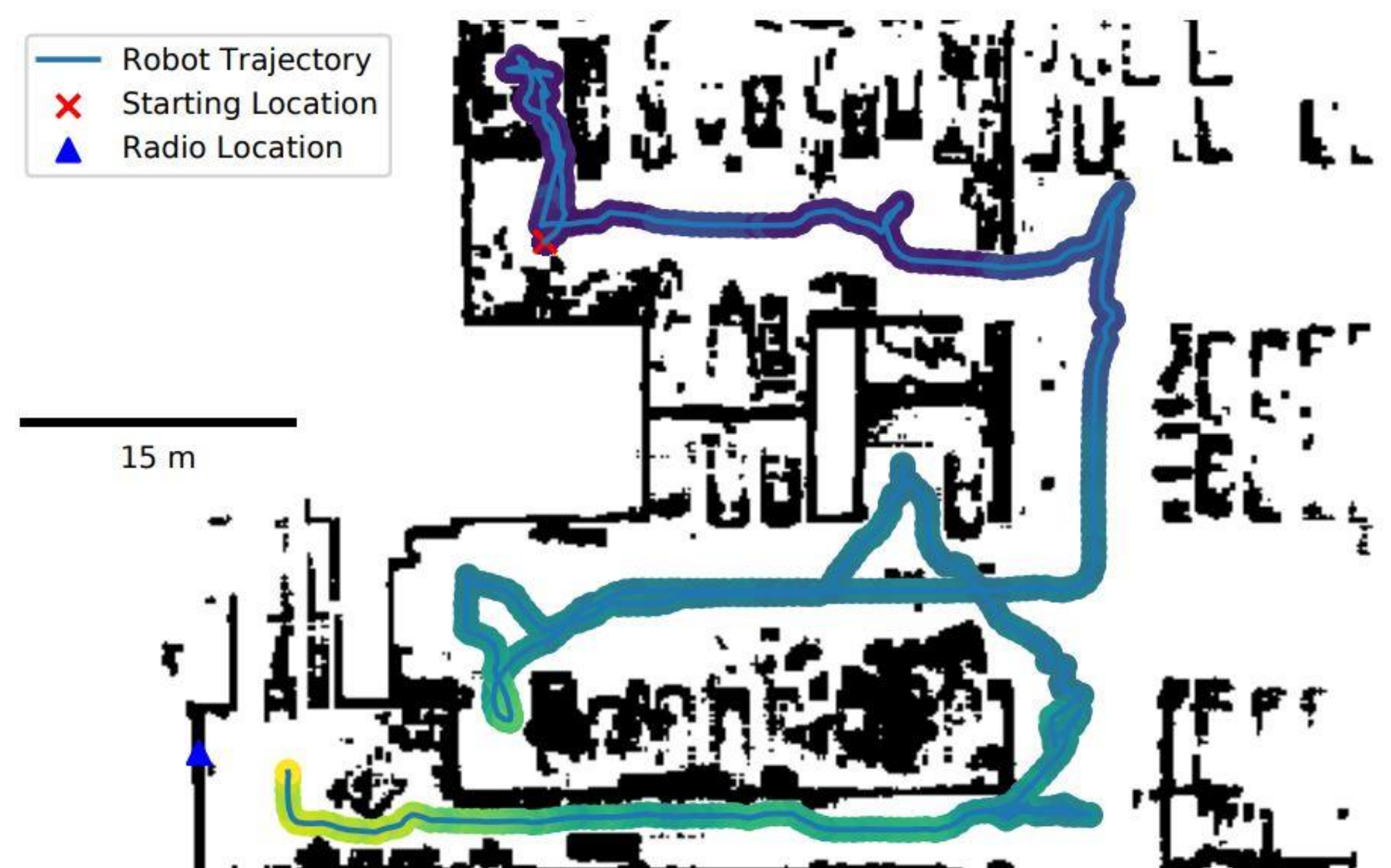
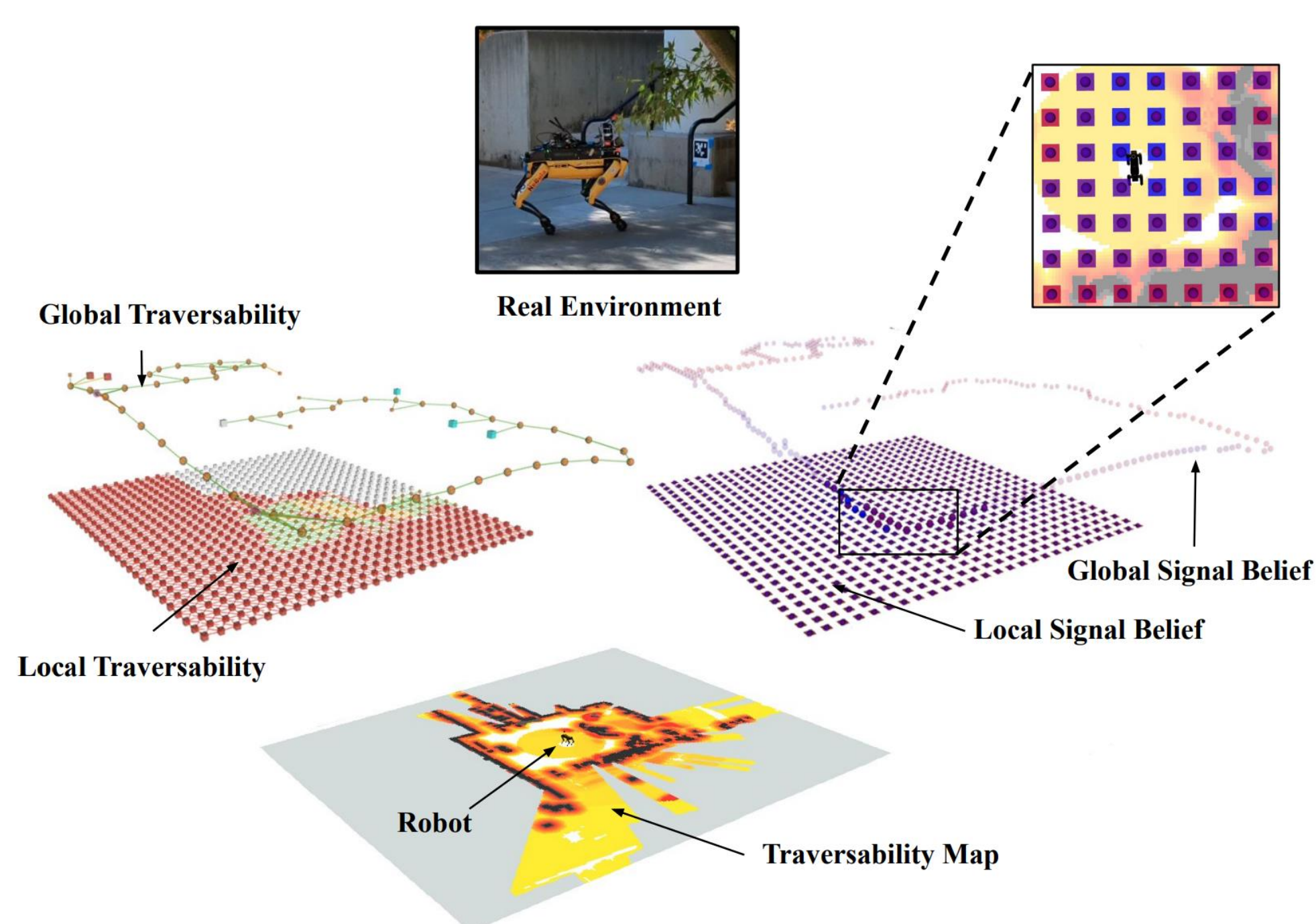
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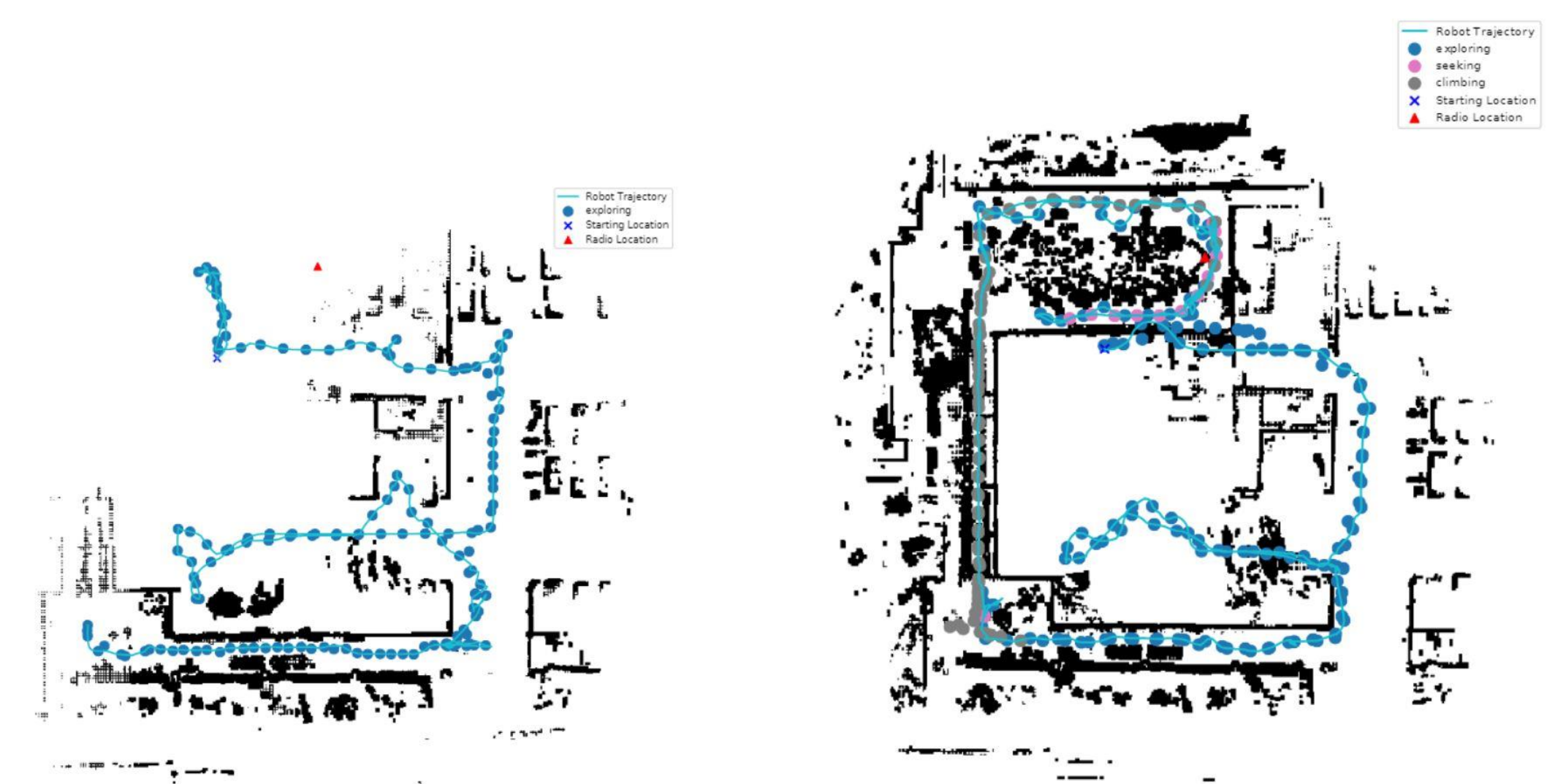
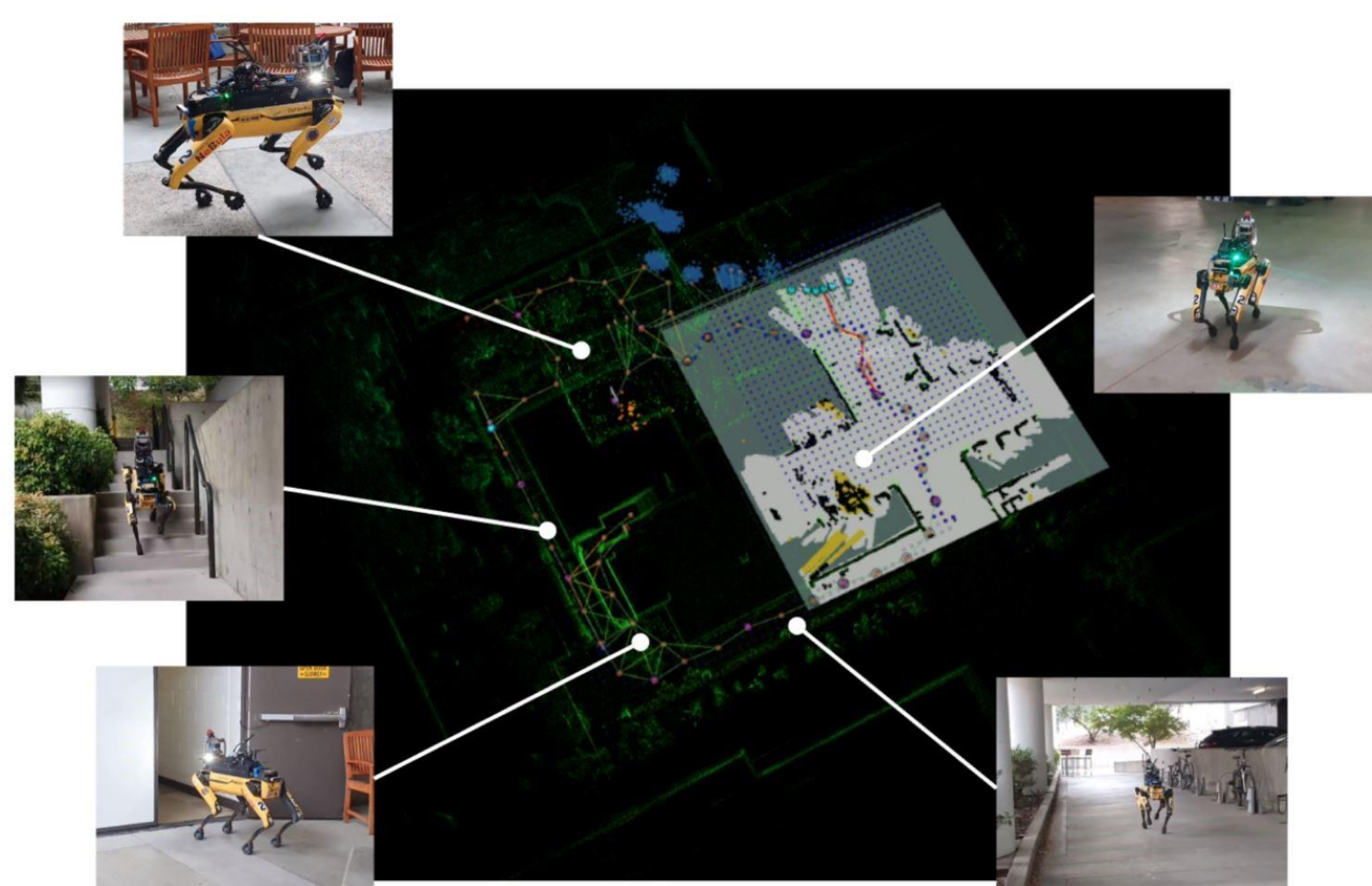
## OBJECTIVE

The main objective of this project is the development of situational awareness algorithms and perception-aware decision-making methods in unknown environments to minimize the perceptual uncertainty and risk associated with autonomy

## Fast and Scalable Signal Inference for Active Robotic Source Seeking



## Semantics-Aware Mission Adaptation for Autonomous Exploration



(a) Without mission adaptation

(b) With mission adaptation

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### Publications:

Christopher E Denniston et al., "Fast and Scalable Signal Inference for Active Robotic Source Seeking", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2023. (Accepted)  
Sangwoo Moon et al., "Semantics-Aware Mission Adaptation for Autonomous Exploration in Urban Environments", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2023. (Accepted)  
Sangwoo Moon et al., "Efficient Line-of-Sight Viewpoint Sampling in Complex Environments for Autonomous Surface Inspection", *IEEE/RSJ International Conference on Robotics and Automation (ICRA)*, 2024. (Submitted)

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