

When navigating a robot in an unfamiliar environment to reach a specific location, a combination of sensors and algorithms is required. Sensors such as Lidar, cameras, IMUs, and wheel encoders gather data about the surroundings and the robot's movements. The Graph-Based Simultaneous Localization and Mapping (SLAM) algorithm is commonly employed for this task.

SLAM involves steps like extracting visual features, estimating motion using odometry, detecting loop closures, optimizing pose estimates, and creating a map while localizing the robot. This technology is vital in robotics, self-driving cars, drones, and augmented reality. It allows machines to autonomously map environments, navigate accurately, and interact with the world effectively.