

## **Understanding the Dynamic Window Approach to Collision Avoidance**

A method by which high-speed mobile robots are governed to avoid collision is known as the dynamic window approach. It constrains the search space to a "dynamic window" of velocities that the robot can reach over a small time horizon, given its current state and acceleration limits. This method selects the best translational and rotational velocities that guarantee a robot can safely stop before obstacles, thus maximizing progress toward its goal. The approach is computationally efficient and robust; hence, it is well-suited for use within dynamic environments with service robots, delivery robots, or exploration robots. It balances target heading, clearance, and speed, ensuring safe and effective navigation.