Carter: Delivery Robot

A reference design to showcase Navigation capabilities in Isaac SDK.

The Isaac SDK will help manufacturers, researchers, startups and developers accelerate development of AI-powered robots. Isaac SDK helps bring deep learning advancements and powerful capabilities to next-generation robots.

OVERVIEW of Isaac SDK

The NVIDIA® Isaac Software Development Kit (SDK) is a developer toolbox for accelerating the development and deployment of AI-powered robots. The SDK includes the Isaac Robot Engine, packages with high-performance robotics algorithms (also known as Isaac GEMs), hardware reference applications and powerful simulation platform, Isaac Sim. The SDK accelerates robot development for manufacturers, researchers and startups by making it easier to add Artificial Intelligence (AI) for perception and navigation into modern-day robots.

The Isaac Robot Engine is a software framework to easily build modular robotics applications. It enables high-performance image processing and deep learning for intelligent robots.

Isaac GEMS are modular capabilities for sensing, planning, or actuation that can be easily plugged into a robotics application. For example, developers can add obstacle detection, stereo depth estimation, or human speech recognition to enrich their robot use cases. Similarly, developers can use the Isaac navigation stack, a collection of modules to build a robotics navigation stack, to their robot.

Isaac Sim is a virtual robotics laboratory and a high-fidelity 3D world simulator. It accelerates research, design, and development in robotics by reducing cost and risk. Developers can quickly and easily train and test their robots in detailed, highly realistic scenarios.

Developers can use virtual robots with simulated sensors (RGB, stereo, depth, segmentation, LIDAR, IMU) in Isaac Sim to test their applications in a high-fidelity simulation environment. Once tested, applications can be deployed to NVIDIA® Jetson AGX Xavier™, Jetson™TX2, or Jetson Nano™ running on physical robots.

Carter: Delivery bot

Carter is an Isaac SDK reference robot platform for autonomous indoor delivery and logistics based on NVIDIA Jetson platform. Developers can build their own Carter robot using sample applications. With NVIDIA Isaac SDK, developers can add capabilities for localization, autonomous navigation, map edition, path planning and state machines. Some of the included apps are:

- Map Creation
- Map Waypoint
- Pose
- Patrol
- Random