**Sustainable Development Goals**

**1. SDG 9: Industry, Innovation, and Infrastructure**

* The project leverages advanced AI, ML, and quantum computing to develop innovative robotic navigation solutions.
* Helps modernize infrastructure by integrating autonomous mobility solutions in urban and rural areas.
* Supports the development of smart transportation and logistics systems.

**2. SDG 11: Sustainable Cities and Communities**

* Enhances urban mobility by enabling safe and autonomous navigation in complex environments.
* Reduces road congestion by optimizing routes using Dijkstra’s Algorithm.
* Improves road safety by using YOLO-based pothole and obstacle detection.

**3. SDG 3: Good Health and Well-being**

* Reduces accidents by enhancing obstacle detection and avoiding hazards.
* Supports emergency response systems, such as autonomous ambulances or rescue robots.
* Helps in air pollution reduction by optimizing routes, thereby reducing fuel consumption for autonomous vehicles.

**4. SDG 13: Climate Action**

* Encourages the use of autonomous electric vehicles for smart transportation.
* Helps in reducing carbon emissions by optimizing the shortest and most efficient routes.
* Enhances environmental monitoring by detecting road conditions, pollution, and traffic anomalies using ML models.

**5. SDG 4: Quality Education**

* Provides a platform for learning and research in robotics, AI, and quantum computing.
* Helps students and researchers experiment with ROS2, SLAM, and navigation algorithms.

**6. SDG 8: Decent Work and Economic Growth**

* Promotes automation in transportation, leading to more efficient logistics and supply chain management.
* Encourages technological advancements in robotics, creating new job opportunities in AI, machine learning, and quantum computing.

**7. SDG 17: Partnerships for the Goals**

* Can be used to collaborate with research institutions, governments, and industries for developing smart mobility solutions.
* Encourages interdisciplinary research in robotics, AI, and sustainable transport.