Autonomous 3D Scanning: Advancements, Challenges, and Integration Strategies

Background and state-of-the-art

- Advanced LiDAR scanners for high-resolution 3D mapping available
- Initial 3D Scan of BMW plants available in FactoryViewer
- Mobile platforms employ state-of-the-art SLAM algorithms for navigation and obstacle avoidance

Research questions

- What is the quality and accuracy of different MLS in an industrial environment?
- Which MLS are compatible with the selected mobile platforms (STR, SPOT, drones) for autonomous 3D scanning in dynamic environments?
- How can an autonomous 3D scanning process be developed and integrated into the existing infrastructure at BMW?

Research methods

- Set-up of a test environment within a BMW plant for the investigation and comparison of different MLS systems
- Utilization of AI-based machine vision techniques, including object recognition and change detection, to enhance the autonomous process

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