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Mathematics:	<input type="checkbox"/>
Programming:	<input type="checkbox"/>
Science:	<input type="checkbox"/>

Software Lab:

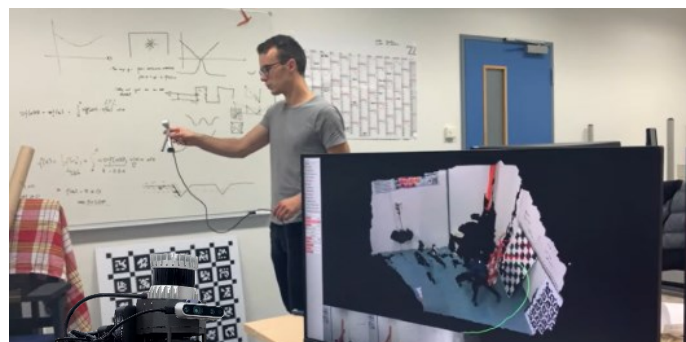
Real-Time Building Digital Model Reconstruction Using a Robotic Agent

Description

The project is designed to capture and process real-time spatial data of the built environment by integrating advanced sensing technologies, such as LiDAR and an RGB-D camera, onto a robotic platform.

These sensors work in unison to collect high-quality spatial and visual data, which is then seamlessly streamed using the Robot Operating System (ROS). ROS facilitates the efficient handling of sensor data, enabling real-time processing through advanced algorithms that reconstruct the environment's geometry with precision.

By combining robotics, state-of-the-art sensors, advanced point cloud processing techniques, and real-time computation, the project aims to provide accurate and dynamic spatial mapping solutions, offering a robust foundation for applications in fields such as architecture, urban planning, and autonomous navigation.



Task

- Getting familiar with a robotic simulation environment and the available robotic setup
- Capturing real-time data using sensor setup (Lidar and RGB-D camera)
- Streaming real time captured data to geometry reconstruction algorithm
- Data processing and geometry reconstruction
- Testing and Optimization (Using a case study representative of the TUM main campus)
- Experimental test with real robot and sensor setup

Supervisors

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References

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