

Master's Thesis

# **Solid-State LiDAR and Stereo-Camera based SLAM for unstructured planetary-like environments**

New developments in solid-state LiDAR technology open the possibility of integrating range sensors in possible space-qualifiable perception setups, thanks to mechanical designs with reduced moveable parts. Thereby, the development of a hybrid stereo-camera/LiDAR sensor setup might overcome disadvantages each technology comes with, such as limit range for stereo camera setups or the minimum range Lidars need. This thesis investigates such a new solid-state Lidar's possibilities by incorporating it along with a stereo camera setup and an IMU sensor into a SLAM system. Foreseen activities might include, but are not limited to, the design and construction of a portable/handhold sensor setup for recording and testing in planetary-like environments, extrinsic calibration of the sensors, integration into a software pipeline, development of a ROS interface, and preliminary mapping tests.

## **Advisors**

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