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研究

Study of Map Joining in EKF-SLAM

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This study investigates simultaneous localization and mapping (SLAM) of a mobile robot using a Kinect depth camera. Depth and image information from Kinect are utilized to realize SLAM algorithms based on extended Kalman filter (EKF). In this thesis, visual landmarks are extracted by SURF algorithm, then three dimensional location of feature points are calculated from Kinect depth image data. A map joining method is proposed to reduce computational complexity of EKF-SLAM, and to correct the deviations of adjacent local maps. A global map of the environment is constructed by the map joining procedure. Navigation experiments show that the accuracy of robot localization for a travel about 83m path is within 0.1m. It is verified that the developed algorithm of simultaneous localization and mapping with map joining can allow robot to navigate in an indoor environment.



