SCIENCE CHINA
Information Sciences

• **Supplementary File** •

VF-Nav: Visual Floor Plan-based Point-Goal Navigation

Wangtian SHEN[1], Ziyang MENG[1*], Pengfei GU[1], Pengkun ZHOU[1], Fangwen YU[1] & Xu LV[1]

[1]*Department of Precision Instrument, Tsinghua University, Beijing* 100084, *China*

Appendix A Simulation experimental environment

To demonstrate the richness of our experiments, we provide some examples of the layouts of our experimental environment, the task setup and the robot's motion trajectories. As shown in Figure A1, our experiments include tasks that require traversing multiple rooms, where the robot encounters various room layouts during task execution. In addition, our environment includes various obstacles (such as sofas, toilets, beds, cabinets, etc.) and randomly changing lighting conditions, see Figure A2. The above demonstrates the universal applicability and robustness of our method under different conditions.

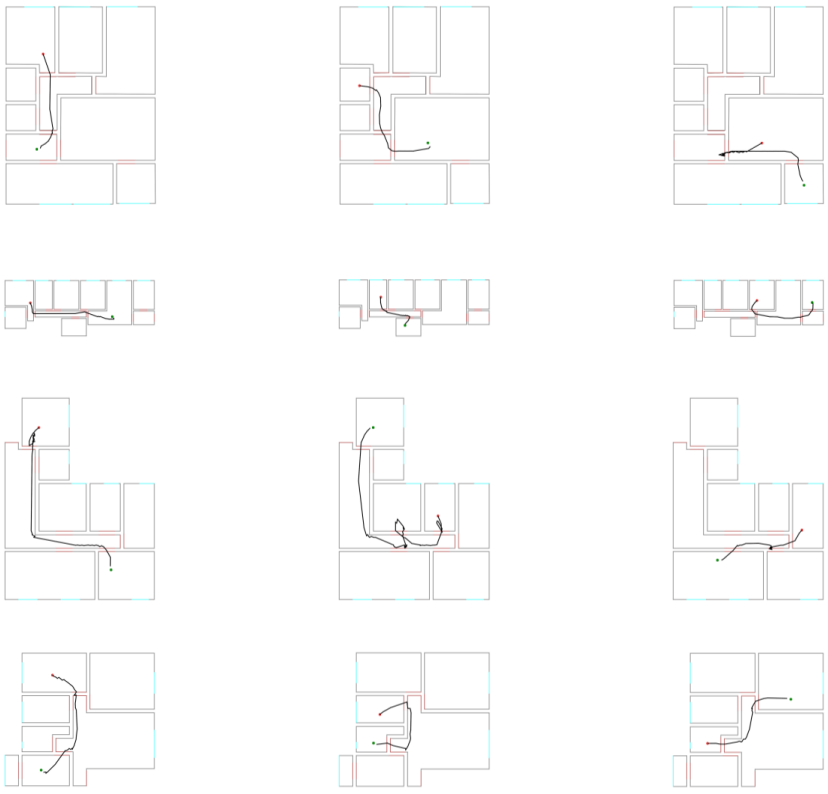

Figure A1 Some examples of the layouts of our experimental environment, the task setup (starting point and goal point) and the robot's motion trajectory.

* Corresponding author (email: ziyangmeng@tsinghua.edu.cn)

Figure A2 The various obstacles and varying lighting conditions in the experimental environment.

Appendix B Real-world experiment results

To validate the localization performance of the proposed algorithm in real-world scenarios, we collect four trajectories, totaling 434.73m in the indoor environment. A panoramic camera is mounted on an Autolabor robot, using the Autolabor's wheel encoder as our odometry sensor. We run a LiDAR-inertial odometry to provide ground-truth localization. Our method was compared with an existing classical geometric visual inertial odometry method, Vins-Mono, as well as the method that only uses the wheel odometry. The localization results of all the methods above is shown in Figure B1.

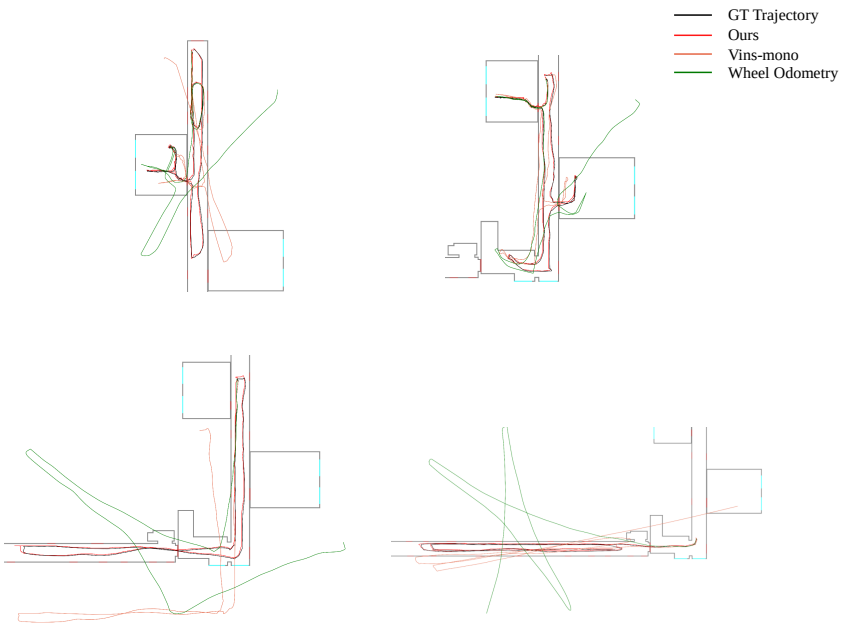

Figure B1 Localization experiment results in the real world.