

# Manohar Kuse, Ph.D

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## Work Experience

- Jan 2022 – present **MagicLeap**, *Senior Software Engineer*, Zurich, Switzerland.  
- Visual-Inertial SLAM Related topics
- Apr 2020 – Nov 2021 **Rovenso AG**, *Robotics Navigation Engineer*, Fribourg, Switzerland.  
- Docking of Ground Robot  
- Configuration management system for deployments  
- Path Planning and Controller Designing for ground robots  
- Robotics UI Designing  
- Sensor Fusion & State Estimation (Lidar+IMU, Lidar+Wheel encoders).

## Education

- Aug 2013 – Dec 2019 **Ph.D**, *Robotics*.  
· The Hong Kong University of Science and Technology, Hong Kong, SAR of China  
· Aerial Robotics Group, Robotics Institute  
· Department of Electronics and Computer Engineering (ECE)  
· Thesis: "Techniques for a Failsafe Visual Inertial SLAM Systems"
- 2008 – 2012 **B.Tech.**  
· The LNM Institute of Information Technology, Jaipur, India  
· Communication and Computer Engineering

## Internships

- Aug 2012 – Dec 2012 **CERN (European Organization for Nuclear Research)**, *Research Assistant*, Geneva, Switzerland.
- May 2011 – Jul 2011 **University of Warwick**, *Research Assistant*, Coventry, United Kingdom.
- Jan 2011 – Mar 2011 **SenoCAD Research GmbH**, *Research Assistant*, Alkmaar, The Netherlands.

## Skills

- *Programming Languages: C/C++, Python*
- *Robotics : ROS, RViz, ceres-solver, GTSam*
- *Machine Learning : TensorFlow, keras, caffe*
- *Vision and Graphics: OpenCV, Panda3d, PCL (Point Cloud Library)*
- *Others: MatLAB, L<sup>A</sup>T<sub>E</sub>X, Qt, cmake, git, mongodb, docker, CUDA (GPU Programming)*

## References

**Prof. Shaojie Shen**  
Assistant Professor  
HKUST, Hong Kong  
[eeshen@ust.hk](mailto:eeshen@ust.hk)  
(Thesis Supervisor)

**Dr. Qin Tong**  
Research Engineer  
Autonomous Driving  
Huawei Technologies  
[qintonguav@gmail.com](mailto:qintonguav@gmail.com)

**Dr. Nasir Rajpoot**  
Professor  
University of Warwick, UK  
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## Selected Publications

Full list available at : <https://scholar.google.com.hk/citations?user=Fu3FSv4AAAAAJAJ>

### Journal

- Bhutta, M Usman Maqbool, **Kuse Manohar**, Fan Rui, Liu Yanan and Liu Ming “Loop-box: Multi-Agent Direct SLAM Triggered by Single Loop Closure for Large Scale Mapping” *IEEE Transactions on Cybernetics*, Impact factor 11.09 in 2019.
- **Kuse M.**, Shen S. “Learning Whole-Image Descriptors for Real-time Loop Detection and Kidnap Recovery under Large Viewpoint Difference” *Robotics and Autonomous Systems(2019)*, Impact factor 2.92 in 2019. Accepted
- Ling Y., **Kuse M.**, Shen S. “Direct Edge Alignment-Based Visual-Inertial Fusion for Tracking of Aggressive Motions” *Springer Autonomous Robots (2017)*, Impact factor 2.706 in 2016.

### Conference

- **Kuse M.**, Jaiswal SP, Shen S., “Deep-Mapnets: A Residual Network for 3D Environment Representation” *International Conference on Image Processing (ICIP-2017, Beijing, China)*.  
Funding courtesy of and HKUST Research Travel Grant (RTG).
- **Kuse M.**, Shen S. “Robust Camera Motion Estimation using Direct Edge Alignment and Sub-gradient Method” *International Conference on Robotics and Automation (ICRA-2016), Stockholm, Sweden*.  
Funding courtesy of and HKUST Research Travel Grant (RTG).
- **Kuse M.**, Jaiswal S. P. “Graph Modelling of 3D Geometric Information for Color Consistency of Multiview Images” *International Conference on Image Processing (ICIP-2015, Quebec City, Canada)*.  
Funding courtesy of ‘IEEE Signal Processing Society (SPS)’ and ‘HKUST’.
- Tripathi A. S., Mathur A., Daga M., **Kuse M.**, Au Oscar C. “2-SiMDoM: A 2-Sieve Model for Detection of Mitosis in Multispectral Breast Cancer Imagery” *International Conference on Image Processing (ICIP-2013, Melbourne, Australia)*.
- **Kuse M.**, Wang YF, Kalasannavar V., Khan M. & Rajpoot N. “Local Isotopic Phase Symmetry Measure for Detection of Beta Cells” HIMA Workshop *International Conference on Medical Image Computing and Computer Assisted Intervention MICCAI-2011, Toronto, Canada*.  
Funding courtesy of ‘American Society for Clinical Pathology’ and ‘LNMIIT’.