Irvin Aloise

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Experience

Magic Leap Zurich, Switzerland

Staff Computer Vision Engineer / Researcher — On Assignment at Google *Present*

- Architect and ship core Android XR perception features under Magic Leap's strategic partnership with Google, powering upcoming devices including the Samsung Galaxy XR and next-gen Google intelligent eyewear.
- Lead cross-functional initiatives across sensor fusion and SLAM to optimize runtime performance on resource-constrained embedded hardware, ensuring seamless algorithm integration onto Google's next-gen intelligent eyewear.
- Scale engineering velocity by mentoring 4 junior-to-senior engineers, providing technical architecture guidance and organizational steering to accelerate project delivery across the team.
- Partner with cross-functional engineering leads to define roadmap priorities, author technical timelines, and execute risk-mitigation strategies for core perception milestones.
- Drive the technical roadmap and architecture of Magic Leap's large-scale and on-device localization and mapping pipeline for AR devices.

Senior Computer Vision Engineer / Researcher *Nov. 2020 – Apr. 2023*

- Designed and developed a new efficient C++ framework for localization and mapping, delivering 10x faster performance with same accuracy compared to the previous solution.
- Owned the end-to-end productization and optimization of the localization and mapping pipeline, successfully shipping production-grade algorithms for the global launch of ML2, and enabling content persistence and massive collaborative experiences using multiple devices.
- Designed and executed evaluation frameworks to validate complex perception systems against real-world and synthetic datasets.

Education

Sapienza University of Rome Rome, Italy

Ph.D. in Engineering in Computer Science *Sep. 2017 – Oct. 2020*

- Research Topics: SLAM, Computer Vision, Graph Optimization, Sensor Calibration, Sensor Fusion.
- Author of multiple peer-reviewed publications in top-tier robotics venues – e.g. RSS, IROS, RA-L.
- Thesis: Exploiting Non-Minimal Parametrizations in Graph-Based SLAM – Advisor: Prof. Dr. Giorgio Grisetti.

Rheinische Friedrich-Wilhelms-Universität Bonn, Germany

Visiting Ph.D. Student @ StachnissLab *Sep. 2019 – Feb. 2020*

- Research Topics: Sensor Fusion, Multi-Sensor Calibration, LiDAR Odometry and Mapping.
- Contact Point: Prof. Dr. Cyrill Stachniss.

Sapienza University of Rome Rome, Italy

M.Sc. in Artificial Intelligence and Robotics *Sep. 2014 – Sep. 2017*

- Thesis: Extended Measurements in Pose-Graph Optimization (summa cum laude).

Sapienza University of Rome Rome, Italy

B.Sc. in Electronic Engineering *Sep. 2010 – Sep. 2014*

Projects

Graph Optimization Library | *Eigen, Catkin, ROS, Git* 2020

- Developed from the ground-up a fully functional Least-Squares solver for SLAM-oriented graph optimization problems – website: srrg.gitlab.io/srrg2-solver.html.

RGB-D SLAM Pipeline | *Eigen, OpenCV, G2O, Catkin, ROS, Git* 2019

- The pipeline works in real time on CPU. It includes both a front-end and a custom backend that leverages a custom formulation to represent multiple geometric primitives – website: srrg.gitlab.io/sashago-website/index.html.

Technical Skills

Languages: C/C++, Python, Java, HTML/CSS
Libraries: Eigen, Ceres, GTSAM, G2O, OpenCV, OpenGV, Abseil, TensorFlow, QNN, ROS
Developer Tools: Git, Mercurial, Docker, Google Cloud Platform, VS Code, Visual Studio, Eclipse, Gitlab CI