

Education

- 09/18– Present **Ph.D. Candidate**, *Massachusetts Institute of Technology* MIT, USA, Focus on Computer Vision for Autonomous Systems. Awarded LACAIXA scholarship.
- 11/17– 06/18 **Visiting Graduate Student**, *Massachusetts Institute of Technology* MIT, USA, Master Thesis. Awarded ZKS scholarship.
- 09/15– 06/18 **MSc. Robotics, Systems and Control**, *Swiss Federal Institute of Technology* ETHZ, Switzerland, GPA: 5.76/6 (Summa Cum Laude).
- 09/14– 07/15 **Visiting Undergraduate Student**, *Nanyang Technological University* NTU, Singapore, Awarded EPFL scholarship.
- 09/12– 07/14 **BSc. Mechanical Engineering**, *Ecole Polytechnique Fédérale de Lausanne* EPFL, Switzerland, GPA: 5.46/6. Exchange Year: *Nanyang Technological University* NTU, Singapore.

Relevant Work Experience

- 09/21– Present **Graduate Research Assistant**, MIT SPARK, Cambridge, Research on metric-semantic SLAM and Spatial Perception for Autonomous Systems.
- 06/21– 09/21 **Robotics Researcher**, NASA/JPL, Pasadena, Member of the CoSTAR/JPL team participating in the DARPA Subterranean challenge – Perception and State Estimation Team.
- 01/19– 06/21 **Graduate Research Assistant**, MIT SPARK, Cambridge, Research on metric-semantic SLAM and Spatial Perception for Autonomous Systems.
- 09/18– 12/18 **Graduate Teaching Assistant**, *Visual Navigation for Autonomous Vehicles* MIT SPARK, Cambridge, New course offering: prepared problem sets and taught weekly recitations.
- 06/17– 10/17 **Research Assistant**, ROBOTICS PERCEPTION GROUP, UZH, Zurich. Implementation of Visual Inertial State Estimation with a novel sensor: the Dynamic Visual Sensor (DVS), a bio-inspired camera that outputs brightness changes instead of intensity frames.
- 09/16– 02/17 **Aerial Robotics Software Engineer**, GoPro, Zurich, *Internship*. Implementation of Visual Inertial Simultaneous Localization and Mapping for GoPro's new drone. Presented a live demonstration to the Vice-President of Engineering for the exceptional results.
- 11/15– 09/16 **Co-founder & CTO**, VELOHUB AG, Zurich. Responsible for the successful development and production of [Blinkers](#), a set of smart lights for bicycles.

Selected Honors & Awards

- 07/21 **MIT Delta-V Accelerator Program**, capstone entrepreneurial experience for students at MIT.
- 09/19 **La Caixa Fellowship**, Ph.D. at MIT – Best applicant (446 applicants).
- 06/18 **Siemens Future Makers Challenge**, 24 hours hackathon, MIT – 1st place.
- 11/17 **Zeno Karl Schindler Scholarship**, Master Thesis at MIT.
- 10/17 **HackUPC ImaginBank Financial Chatbot Award**, 36 hours hackathon, Spain – 1st/700.
- 09/17 **IROS Autonomous Drone Race**, Vancouver, Canada – 2nd place.
- 04/17 **International Autonomous Driving Car Competition**, Arizona, USA – 1st place, and Best Object Classification – 100 students from several countries.
- 11/15 **Autonomous Search and Rescue, Robotics Course Competition** ETHZ – 1st/50 students.

- 11/15 **Swiss Start Up Factory Accelerator Program** to develop Velohub AG – 800 proposals.
- 10/15 **ETHZ Entrepreneur Club Award** – 3rd prize.
- 08/14 **EPFL Exchange Year Scholarship** – Nanyang Technological University.
- 07/11 **Spanish Selectividad** (13.74/14) & **French Baccalauréate** (18.45/20), Top 10 best grade out of 22,000 students (i.e. spanish & french SAT).

Journal Publications

- 2021 [8] **A. Rosinol**, A. Violette, M. Abate, N. Hughes, Y. Chang, J. Shi, A. Gupta, L. Carlone "Kimera: from SLAM to Spatial Perception with 3D Dynamic Scene Graphs" *IJRR 2021 (invited)*. (Featured in: [Science News](#), [MIT News](#), ...)
- 2018 [7] **A. Rosinol**, H. Rebecq, T. Horstschaefer and D. Scaramuzza. "Ultimate SLAM? Combining Events, Images, and IMU for Robust Visual SLAM in HDR and High Speed Scenarios" *RA-L 2018. Best Paper Award Finalist* (Featured in: [IEEE Spectrum](#), [Digital Trends](#), ...)

Conference Publications

- 2021 [6] **A. Rosinol**, L. Carlone "Smooth Mesh Estimation from Depth Data using Non-Smooth Convex Optimization" *IROS 2021*.
- 2020 [5] F. Milano, A. Loquercio, **A. Rosinol**, D. Scaramuzza, L. Carlone, "Primal-Dual Mesh Convolutional Neural Networks" *NeurIPS 2020*.
- 2020 [4] **A. Rosinol**, A. Gupta, M. Abate, J. Shi, L. Carlone, "3D Dynamic Scene Graphs: actionable spatial perception with places, objects, and humans" *RSS 2020*.
- 2020 [3] **A. Rosinol**, M. Abate, Y. Chang, L. Carlone, "Kimera: an Open-Source Library for Real-Time Metric-Semantic Localization and Mapping" *ICRA 2020*.
- 2019 [2] **A. Rosinol**, T. Sattler, M. Pollefeys, L. Carlone, "Incremental Visual-Inertial 3D Mesh Generation with Structural Regularities" *ICRA 2019*.
- 2018 [1] **A. Rosinol**, "Densifying Sparse VIO: a Mesh-based approach using Structural Regularities." Master's Thesis, ETH-Zürich, 2018.

Workshop Papers

- 2019 **NorthEast Robotics Colloquium (NERC)**: "Kimera: Real-Time Metric-Semantic Localization and Mapping" – nerc.seas.upenn.edu.
- 2019 **2nd International Workshop on Lines, Planes and Manhattan Models**: "Towards Real-Time Metric-Semantic Localization and Mapping with 3D Mesh Models" – seis.bristol.ac.uk.

Workshop Organization

- 2021 **ICCV Structural and Compositional Learning on 3D Data** – geometry.stanford.edu/struco3d
- 2020 **ICRA Perception, Action, Learning** From Metric-Semantic Scene Understanding to High-level Task Execution – mit-spark.github.io/pal-icra2020

Invited Talks

- 2021 **Robotics Perception Group (UZH)**, "Kimera: from SLAM to Spatial Perception with 3D Dynamic Scene Graphs" – [Recording](#).
- 2021 **Magic Leap**, "Kimera: from SLAM to Spatial Perception with 3D Dynamic Scene Graphs".
- 2021 **MathWorks**, "Kimera: from SLAM to Spatial Perception with 3D Dynamic Scene Graphs".

2020 **3D Scene Understanding (CVPR)**, "3D Dynamic Scene Graphs: Actionable Spatial Perception with Places, Objects, and Humans" – scene-understanding.com.

2020 **ICRAxMIT Panelist**, "Kimera: an Open-Source Library for Real-Time Metric-Semantic Localization and Mapping" – [Recording](#).

Teaching & Mentoring

2020 **Metric-Semantic SLAM with Kimera: A Hands On Tutorial** – [Recording](#).

2019 **MIT Driverless Team Advisor** – Perception and State Estimation Team. driverless.mit.edu.

2018 **Teaching Assistant** – Visual Navigation for Autonomous Vehicles (MIT 16.S398).

Open-Source Code

2019 **Kimera**: source code for [Kimera-VIO](#), [Kimera-VIO-ROS](#), [Kimera-Semantics](#), and [Kimera-RPGO](#). – GitHub Stats: 1100+ Stars, 150+ Forks.

Open-Source Datasets

2021 **uHumans2**: extends uHumans dataset with more environments, indoors and outdoors, with and without humans. A total of 12 large scale datasets.

2020 **uHumans**: a simulated photo-realistic 65m² office with humans. Provides stereo images, inertial data, and ground-truth poses, 2D semantic segmentation, and depth.

Extracurricular

2021 **MIT Sandbox & MIT Fuse & MIT GSD & MIT Delta-V & NSF I-CORPS**, selective entrepreneurial education and accelerator programs for scientists.

2021 **Dorm Room Fund** – inaugural PhD Founders Track – [blog post](#).

2021 **Co-chair** – IROS 2021 – Mapping II session.

Press / Media Coverage

2021 ["Easy for you, tough for a robot"](#) – Science News.

2020 ["Alexa, go to the kitchen and fetch me a snack"](#) – MIT News.

2020 ["MIT system improves robots' spatial perception"](#) – The Robot Report.

2017 ["Autonomous drones can now fly in low light"](#) – Digital Trends.

2017 ["Drone With Event Camera Takes First Autonomous Flight"](#) – IEEE Spectrum.

Language Proficiency

English: Fluent

French: Fluent

Spanish: Native

Catalan: Native