Dr Mielle Malcolm

Avenue du Censuy 18, 1020 Renens, Switzerland

✉ malcolm.mielle@protonmail.com | ⌨ MalcolmMielle | in malcolm-mielle

ⓘ 0000-0002-3079-0512 | 🎓 niir1TkAAAAJ

Education

Örebro University, Sweden   *Fakultetsgatan 1, Örebro, Sweden*
PhD in Computer Science   *2015 - 2019*
Thesis: Helping robots help us: Using prior information for localization, navigation, and human-robot interaction

Polytech Paris Sorbonne   *4 place Jussieu, Paris, France*
Master of Engineering (MSc) in Robotics   *2011 - 2014*

Languages

French   mother tongue
English   C2
Swedish   A2

Work Experience

Schindler   *EPFL innovation Park, Switzerland*
Team Lead   *Jan 2022 - present*
- Stage of academic research career: R2/early R3.

Bluebotics   *St-Sulpice, Switzerland*
Software Engineer   *July 2020 - Nov 2021*
- Designed and implemented real-time motion detection algorithms in laser scans.
- Created latency calibration algorithms to synchronize multiple sensor modalities.

Research funding and grants

INSULATED   *Switzerland*
Innosuisse   *01.09.2023—31.08.2026*
- Website: `https://www.aramis.admin.ch/Grunddaten/?ProjectID=53471`
- Role: initial idea, finding collaborators, draft of the proposal (research and business plan).
- Principal investigator: Dr Malcolm Mielle and Prof Olga Fink (EPFL).
- Amount: 317,814.00CHF

Research output

- Number of publications: 9
- 6 patents (2 public, 4 pending publication)

Journal Articles

URSIM: Unique Regions for Sketch Map Interpretation and Matching
  Malcolm Mielle, Martin Magnusson, Achim Lilienthal
  Robotics p. 43. 2019, DOI: `10.3390/robotics8020043`

The Auto-Complete Graph: Merging and Mutual Correction of Sensor and Prior Maps for SLAM
  Malcolm Mielle, Martin Magnusson, Achim J. Lilienthal
  Robotics p. 40. 2019, DOI: `10.3390/robotics8020040`

Conference Proceedings

3QFP: Efficient neural implicit surface reconstruction using Tri-Quadtrees and Fourier feature Positional encoding
  Shuo Sun, Malcolm Mielle, Achim J. Lilienthal, Martin Magnusson
  2024 IEEE International Conference on Robotics and Automation (ICRA), 2024, Yokohama, Japan
  URL: `http://arxiv.org/abs/2401.07164`

High-Fidelity SLAM Using Gaussian Splatting with Rendering-Guided Densification and Regularized Optimization
  Shuo Sun, Malcolm Mielle, Achim J. Lilienthal, Martin Magnusson
  2024 IEEE International Conference on Intelligent Robots and Systems (IROS), 2024, Abu Dhabi, UAE
  URL: `http://arxiv.org/abs/2403.12535`

TEAM: A Parameter-Free Algorithm to Teach Collaborative Robots Motions from User Demonstrations:
  Lorenzo Panchetti, Jianhao Zheng, Mohamed Bouri, Malcolm Mielle
  Proceedings of the 20th International Conference on Informatics in Control, Automation and Robotics, 2023, Rome, Italy
  DOI: `10.5220/0012159700003543`

A comparative analysis of radar and lidar sensing for localization and mapping
  Malcolm Mielle, Martin Magnusson, Achim J. Lilienthal
  2019 European Conference on Mobile Robots (ECMR), 2019, Prague, Czech Republic
  DOI: `10.1109/ECMR.2019.8870345`

A Method to Segment Maps from Different Modalities Using Free Space Layout MAORIS: Map of Ripples Segmentation
  Malcolm Mielle, Martin Magnusson, Achim J. Lilienthal
  2018 IEEE International Conference on Robotics and Automation (ICRA), 2018, Brisbane, QLD
  DOI: `10.1109/ICRA.2018.8461128`

SLAM auto-complete: Completing a robot map using an emergency map
  Malcolm Mielle, Martin Magnusson, Henrik Andreasson, Achim J. Lilienthal
  2017 IEEE International Symposium on Safety, Security and Rescue Robotics (SSRR), 2017, Shanghai, China
  DOI: `10.1109/SSRR.2017.8088137`

Using sketch-maps for robot navigation: Interpretation and matching
  Malcolm Mielle, Martin Magnusson, Achim J. Lilienthal
  2016 IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR), 2016, Lausanne, Switzerland
  DOI: `10.1109/SSRR.2016.7784307`

Preprints

ThermoNeRF: Multimodal Neural Radiance Fields for Thermal Novel View Synthesis
  Mariam Hassan, Florent Forest, Olga Fink, Malcolm Mielle
  2024, URL: `http://arxiv.org/abs/2403.12154`

Patents

Method of doing maintenance on an elevator
  Nicola ISCHIA, Christian Studer, Lorenzo PANCHETTI, Shuhan He, Jianhao ZHENG, Malcolm Mielle
  2024, URL: `https://patents.google.com/patent/WO2024037884A1/en?inventor=Malcolm+Mielle`

Method and device for measuring a shaft such as an elevator shaft
  Malcolm Mielle, Mariam Hassan
  2024, URL: `https://patents.google.com/patent/EP4421015A1/en?inventor=Malcolm+Mielle`

Method of operating a landing door of an elevator shaft and door opening tool for such a door
  Malcolm Mielle, Shuhan He
  2024, URL: `https://patents.google.com/patent/EP4324778A1/en?inventor=Malcolm+Mielle`

Datasets

ThermoNeRF: Multimodal Neural Radiance Fields for Thermal Novel View Synthesis
  anonymous
  2024, DOI: `10.5281/ZENODO.10835108`

Ground Truth Matches between Maps with High Disparity
  Malcolm Mielle, Martin Magnusson, Achim J. Lilienthal

2019, DOI: `10.5281/ZENODO.2574036`

Dortmund Slam Dataset - Radar, Velodyne
  Malcolm Mielle, Martin Magnusson, Achim J. Lilienthal
  2018, DOI: `10.5281/ZENODO.1489911`

Hannover University Slam Dataset - Radar, Velodyne
  Malcolm Mielle, Martin Magnusson, Achim J. Lilienthal
  2018, DOI: `10.5281/ZENODO.1489924`

Örebro University Basement SLAM Dataset - Radar, Velodyne
  Malcolm Mielle, Martin Magnusson, Achim J. Lilienthal
  2018, DOI: `10.5281/ZENODO.1489896`

Novel Radar
  Malcolm Mielle, Martin Magnusson, Achim J. Lilienthal
  2017, DOI: `10.5281/ZENODO.893154`

Sketch Maps Dataset
  Malcolm Mielle, Martin Magnusson, Achim J. Lilienthal
  2017, DOI: `10.5281/ZENODO.892062`

SOFTWARE

Schindler-EPFL-Lab/thermo-nerf
  2024, URL: `https://github.com/Schindler-EPFL-Lab/thermo-nerf`

Schindler-EPFL-Lab/team
  2022, URL: `https://github.com/Schindler-EPFL-Lab/team`

MalcolmMielle/Auto-Complete-Graph
  2017, URL: `https://github.com/MalcolmMielle/Auto-Complete-Graph`

MalcolmMielle/maoris
  2017, URL: `https://github.com/MalcolmMielle/maoris`

Research supervision

2024 - today	**PhD student: C. Xu**, co-director of the thesis with Prof. O. Fink	*EPFL, Switzerland*
2023 - today	**PhD student: S. Sun**, co-supervisor with Dr Martin Magnusson and Prof. A. J. Lilienthal.	*Örebro, Sweden*
2022 - today	**Master thesis**, Principal supervisor of 6 Master thesis **Outcomes**: 3 patents, 1 publication, 1 dataset, and 1 prize.	*Schindler, Switzerland*

leadership experience

Schindler   *Lausanne*
Team lead   *2022-today*
- 7 projects
- 18 Master students (6 thesis + 12 internships)
- Project management (planning using Agile methodology, and supervision), hiring, and budget management.

Innosuisse   *Schindler/EPFL, Switzerland*
Co-Principal investigator—INSULATED
Innosuisse grant   *2024-today*
Co-Principal investigator of the INSULATED project and co-director of the associated PhD thesis.

UNA4CAREER *University Complutense of Madrid, Spain*

Lead for SURF grant proposal *2021*

Surface vehicle Reckoning with natural Features—Dropped out due to company change.

Horizon *Technical University of Munich, Germany*

Lead for INSULATE grant proposal *2021*

First proposal for the INSULATE project targetting renovation of older building stocks—Rejected.

FORMAS *Örebro University, Sweden*

Lead for FORMAS grant proposal *2020*

Lead for FORMAS grant proposal with Örebro University, the Technical University of Munich, and the University of Queensland on renovation of older building stocks—Rejected.

Teaching merits

Örebro university *Örebro, Sweden*

Teaching assistant *2016 - 2018*

- Course: Mathematics and Introduction to Python

Completude *Paris, France*

Physics and chemistry tutor *2012 - 2013*

- Course: Physics and chemistry

Achievements

2017 **Best student paper award**, IEEE International Symposium on Safety, Security and Rescue Robotics (SSRR) *Shanghai, China*

International network and collaborations

EPFL *Lausanne, Switzerland*

- Prof. Olga Fink—co-PI of the INSULATED project, and co-director of a PhD thesis.

Örebro University *Örebro, Sweden*

- Dr. Martin Magnusson—co-supervising his student Shuo Sun.

Technical University of Munich *Munich. Germany*

- Prof. Achim J. Liliental—co-supervisor of Shuo Sun.

HEIG-VD *Neuchatel, Switzerland*

- Prof. Andres Perez Uribe—currently drafting a grant proposal for Innosuisse together.

Scientific and societal impact

- I made available 6 datasets—including one related to firemen operations (`https://zenodo.org/records/1489911`) and one for building renovation (`https://zenodo.org/records/10835108`).

- Currently developing a dataset of synthetic buildings for windows-to-wall ratio of building, targeting building renovation.

- During covid lockdown, lead a group of volunteers in the evaluation of three state-of-the-art methods for spo2 measurements (used for early detection of covid symptoms) from smartphone cameras (`https://github.com/CoVital-Project/Spo2_evaluation`).

- Developed an app to reduce food waste (`https://malcolmmielle.github.io/Fridgify/`).