Simone Angarano

PHD STUDENT · MACHINE LEARNING FOR ROBOTICS

Politecnico di Torino, Turin, Italy
Interdepartmental Center for Service Robotics (PIC4SeR)

✉ Mail | 🗐 Publications | 🏠 Website | GitHub

Education

PhD in Electrical, Electronics, and Communications Engineering *Turin, Italy*

POLITECNICO DI TORINO - INTERDEPARTMENTAL CENTER FOR SERVICE ROBOTICS (PIC4SeR) *11/2021 - present*

- Project: Efficient Deep Learning models for Robot perception, control, and decision-making.
- Advisor: Prof. Marcello Chiaberge.
- Currently vising at the University of Texas at Austin - VITA Group.

MS in Mechatronic Engineering (110/110 with honors) *Turin, Italy*

POLITECNICO DI TORINO *10/2018 - 10/2020*

- Thesis: Deep Learning Methodologies for Ultra-Wideband Ranging Error Compensation.
- Advisor: Prof. Marcello Chiaberge.

BS in Electronic Engineering (103/110) *Turin, Italy*

POLITECNICO DI TORINO *10/2015 - 10/2018*

- Final Project: FPGA Implementation of an End-to-end Digital Filter.
- Advisor: Prof. Maurizio Zamboni.

Research Experience

Visiting Research Scholar *Austin, TX, USA*

UNIVERSITY OF TEXAS AT AUSTIN - VISUAL INFORMATICS GROUP (VITA) *09/2023 - present*

- Project: Compressing Large Foundation Models with Knowledge Distillation and Sparsity.
- Advisor: Prof. Atlas Wang.

Research Fellow *Turin, Italy*

POLITECNICO DI TORINO - INTERDEPARTMENTAL CENTER FOR SERVICE ROBOTICS (PIC4SeR) *11/2020 - 10/2021*

- Project: Machine Learning for robot perception and navigation.
- Advisor: Prof. Marcello Chiaberge.

Publications

PUBLISHED

Navone, A., Martini, M., **Angarano, S.**, & Chiaberge, M. (2023). Online Learning of Wheel Odometry Correction for Mobile Robots with Attention-based Neural Network. In 2023 IEEE 19th International Conference on Automation Science and Engineering (CASE). IEEE.

Angarano, S., Salvetti, F., Martini, M., & Chiaberge, M. (2023). Generative Adversarial Super-resolution at the Edge with Knowledge Distillation. Engineering Applications of Artificial Intelligence, 123, 106407.

Marchionna, L., Pugliese, G., Martini, M., **Angarano, S.**, Salvetti, F., & Chiaberge, M. (2023). Deep Instance Segmentation and Visual Servoing to Play Jenga with a Cost-Effective Robotic System. Sensors, 23(2), 752.

Salvetti, F., **Angarano, S.**, Martini, M., Cerrato, S., & Chiaberge, M. (2022). Waypoint Generation in Row-based Crops with Deep Learning and Contrastive Clustering. In Machine Learning and Knowledge Discovery in Databases: European Conference, ECML PKDD 2022, Grenoble, France, September 19–23, 2022, Proceedings. Springer International Publishing.

Mazzia, V., **Angarano, S.**, Salvetti, F., Angelini, F., & Chiaberge, M. (2022). Action Transformer: A Self-attention Model for Short-time Pose-based Human Action Recognition. Pattern Recognition, 124, 108487.

Martini, M., Cerrato, S., Salvetti, F., **Angarano, S.**, & Chiaberge, M. (2022). Position-Agnostic Autonomous Navigation in Vineyards with Deep Reinforcement Learning. In 2022 IEEE 18th International Conference on Automation Science and

Engineering (CASE) (pp. 477-484). IEEE.

Angarano, S., Salvetti, F., Mazzia, V., Fantin, G., Gandini, D., & Chiaberge, M. (2022). Ultra-Low-Power Range Error Mitigation for Ultra-Wideband Precise Localization. In Science and Information Conference (pp. 814-824). Springer, Cham.

Angarano, S., Mazzia, V., Salvetti, F., Fantin, G., & Chiaberge, M. (2021). Robust ultra-wideband range error mitigation with deep learning at the edge. Engineering Applications of Artificial Intelligence, 102, 104278.

Accepted

Navone, A., Martini, M., **Angarano, S.**, & Chiaberge, M. (2023). Lavender Autonomous Navigation with Semantic Segmentation at the Edge. Accepted at ECML PKDD 2023 Workshop "Deep Learning for Sustainable Precision Agriculture" (Turin, Italy).

Under Review

Angarano, S., Martini, M., Navone, A., & Chiaberge, M. (2023). Domain Generalization for Crop Segmentation with Knowledge Distillation. arXiv preprint arXiv:2304.01029. Presented at ECML PKDD 2023 Workshop "Adapting to Change: Reliable Learning Across Domains" (Turin, Italy).

Navone, A., Martini, M., Ostuni, A., **Angarano, S.**, & Chiaberge, M. (2023). Autonomous Navigation in Rows of Trees and High Crops with Deep Semantic Segmentation. arXiv preprint arXiv:2304.08988.

Angarano, S., Martini, M., Salvetti, F., Mazzia, V., & Chiaberge, M. (2022). Back-to-Bones: Rediscovering the Role of Backbones in Domain Generalization. arXiv preprint arXiv:2209.01121.

Presentations

Conferences

ECML PKDD, 2023. Workshop chair *"Deep Learning for Sustainable Precision Agriculture"*. Turin, Italy.

ECML PKDD, 2023. Poster presentation *"Domain Generalization for Crop Segmentation with Knowledge Distillation"*. Turin, Italy.

ECML PKDD, 2022. Poster presentation *"Waypoint Generation in Row-based Crops with Deep Learning and Contrastive Clustering"*. Grenoble, France.

SAI Computing Conference, 2022. Oral presentation *"Ultra-Low-Power Range Error Mitigation for Ultra-Wideband Precise Localization"*. London, UK.

IRIM Conference, 2021. Poster presentation *"Local Planners with Deep Reinforcement Learning for Indoor Autonomous Navigation"*. Rome, Italy.

Other Events

PhD Poster Day, 2022. Poster presentation *"Efficient Deep Learning models for Robot perception, control, and decision-making"*. Turin, Italy.

Data, AI, and Robotics @PoliTo, 2021. Poster presentation *"AI@PIC4SeR"*. Turin, Italy.

Teaching Experience

Academic

2022-2023	**Laboratory Teaching Assistant and Examinator**, Electronics Fundamentals and Applications.	*Politecnico di Torino*
2022-2023	**Laboratory Teaching Assistant and Examinator**, Electronic Systems for Mechatronics.	*Politecnico di Torino*
2017-2020	**Teacher**, Linear Algebra and Geometry Tutoring Course.	*Politecnico di Torino*
2016-2019	**Teacher**, Calculus Tutoring Course.	*Politecnico di Torino*

Company

| 2022 | **Teacher**, Machine Learning 101. | *2+ Consulting* |
| 2022 | **Teacher**, Machine Learning 101. | *4Marketing* |

Mentoring

2023	**Deep Computer Vision for Indoor Social Robotics**, MS Thesis Tutor.	*PIC4SeR*
2023	**Running Analysis with Multivariate Time-series Regression**, MS Thesis Tutor.	*PIC4SeR*
2022	**Bee Detection and Counting with Deep Learning at the Edge**, MS Thesis Tutor.	*PIC4SeR*
2022	**Learning Odometric Error in Mobile Robots with Deep Learning**, MS Thesis Tutor.	*PIC4SeR*
2022	**Hand Gesture Recognition for Robotic Domestic Assistant**, MS Thesis Tutor.	*PIC4SeR*
2022	**Vineyard Segmentation with Deep Learning for 4.0 Agriculture**, MS Thesis Tutor.	*PIC4SeR*
2021	**Indoor Navigation with Low-power Vocal Assistant at the Edge**, MS Thesis Tutor.	*PIC4SeR*
2021	**Visual and Tactile Perception to Play Jenga with a Robotic Arm**, MS Thesis Tutor.	*PIC4SeR*
2021	**Face Recognition with Deep Learning for Service Robotics**, MS Thesis Tutor.	*PIC4SeR*
2021	**Deep Computer Vision at the Edge for Apple Counting**, MS Thesis Tutor.	*PIC4SeR*
2021	**Semantic Scene Segmentation for Indoor Robot Navigation**, MS Thesis Tutor.	*PIC4SeR*

Grants

2020-2021	**Graduate Research Fellow Grant**, Politecnico di Torino.	*€ 18,000*
2016-2020	**Tuition Fees Refund for Academic Merit**, Politecnico di Torino.	*€ 1,000*
2014-2015	**"SuperMedia" Scholarship**, Italian National Social Security Institute.	*€ 2,200*

Additional Activities

INSTITUTIONAL ROLES

2021-2023	**Department of Electronics and Telecommunications Council**, *PhD Representative*.	*Politecnico di Torino*
2019-2020	**Department of Electronics and Telecommunications Council**, *Student Representative*.	*Politecnico di Torino*
2019-2020	**Consortium of Leading Universities of Science and Technology for Education and Research (CLUSTER)**, *Representative for Politecnico di Torino*.	*European Union*
2017-2019	**Academic Senate**, *Student Representative*.	*Politecnico di Torino*

VOLUNTEER WORK

2015-2020	**Lavori in Corso Student Association**, *Board Member*. Student representation, Welcoming and study help for freshmen, Cultural events, Social media management.	*Politecnico di Torino*
2015-2023	**Il Cammino Association**, *Volunteer*. Helping kids at risk of exclusion with their homework.	*Turin, Italy*
2014-2023	**Meeting for Friendship amongst Peoples Foundation**, *Volunteer*. Electrician, Catering Assistant, Surveillant.	*Rimini, Italy*
2008-2023	**Banco Alimentare Foundation**, *Volunteer*. Recovery of surplus food in favor of charity organizations.	*Italy*