

Simone Angarano

PHD CANDIDATE · EFFICIENT AND ROBUST DEEP LEARNING

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 - 10/2024

- Project: Efficient and Robust Deep Learning for Perception, Control, and Decision-making.
- Advisor: Prof. Marcello Chiaberge.

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

Research AI Expert

Brussels, Belgium

EUROPEAN COMMISSION - JOINT RESEARCH CENTRE (JRC)

03/2024 - 12/2024

- Project: Deep Learning for Drought Forecasting.

Visiting Research Scholar

Austin, TX, USA

UNIVERSITY OF TEXAS AT AUSTIN - VISUAL INFORMATICS GROUP (VITA)

09/2023 - 06/2024

- Project: Efficient Large Foundation Models using 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: Deep Learning for robot perception and navigation.
- Advisor: Prof. Marcello Chiaberge.

Publications

PUBLISHED

Angarano, S., Martini, M., Salvetti, F., Mazzia, V., & Chiaberge, M. (2024). Back-to-Bones: Rediscovering the Role of Backbones in Domain Generalization. *Pattern Recognition*, 110762.

Angarano, S., Martini, M., Navone, A., & Chiaberge, M. (2024). Domain Generalization for Crop Segmentation with Standardized Ensemble Knowledge Distillation. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* (pp. 5450-5459).

Navone, A., Martini, M., Ostuni, A., **Angarano, S.**, & Chiaberge, M. (2023). Autonomous Navigation in Rows of Trees and High Crops with Deep Semantic Segmentation. In *2023 European Conference on Mobile Robots (ECMR)* (pp. 1-6). IEEE.

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.
- Martini, M., Mazzia, V., **Angarano, S.**, Gandini, D., & Chiaberge, M. (2021). Local Planners with Deep Reinforcement Learning for Indoor Autonomous Navigation. In *2021 I-RIM Conference* (pp. 157-160). I-RIM.
- 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

- Navone, A., Martini, M., Ambrosio, M., Ostuni, A., **Angarano, S.**, & Chiaberge, M. (2024). GPS-free Autonomous Navigation in Cluttered Tree Rows with Deep Semantic Segmentation. *arXiv preprint arXiv:2404.05338*.
- Cerrato, S., Mazzia, V., Salvetti, F., Martini, M., **Angarano, S.**, Navone, A., & Chiaberge, M. (2021). A Deep Learning Driven Algorithmic Pipeline for Autonomous Navigation in Row-based Crops. *arXiv preprint arXiv:2112.03816*.

Presentations

CONFERENCES

- CVPR**, 2024. Poster presentation. Seattle, WA, USA.
- 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**, 2023. Poster presentation "Knowledge Distillation for Efficient and Robust Deep Learning Models". Politecnico di Torino, Turin, Italy.
- PhD Poster Day**, 2022. Poster presentation "Efficient Deep Learning models for Robot perception, control, and decision-making". Politecnico di Torino, Turin, Italy.
- Data, AI, and Robotics @PoliTo**, 2021. Poster presentation "AI@PIC4SeR". Turin, Italy.

Teaching Experience

ACADEMIC

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

COMPANY

2022	Teacher , Machine Learning 101.	<i>2+ Consulting</i>
2022	Teacher , Machine Learning 101.	<i>4Marketing</i>

Mentoring

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

Grants

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

Additional Activities

INSTITUTIONAL ROLES

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

VOLUNTEER WORK

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