Alessandro **Simoni**

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Summary

I am a PhD Student enrolled in the International Doctorate in ICT program at the AImageLab research group of the University of Modena and Reggio Emilia (Italy), under the supervision of Prof. Roberto Vezzani. My PhD thesis defense is expected to be in March 2024. My research activities are focused on Computer Vision and Deep Learning applied to Collaborative Robotics scenarios, more precisely in topics like 3D Object Reconstruction and 3D Human/Robot Pose Estimation. Moreover, I'm actively involved in two projects in collaboration with two different companies related to 3D Human-Centric Scene Understanding in outdoor video surveillance scenarios and 3D Vehicle Reconstruction in real-world scenarios, respectively.

Knowledge and computer skills

Programming languages	Python (proficiency), C++, JavaScript
Libraries and Tools	PyTorch, NumPy, OpenCV, PyCharm
Domains	Deep Learning, 2D/3D Computer Vision, 3D Human/Robot Pose Estimation, 3D Reconstruction
Spoken languages	Italian mothertongue, English C1 (certifed ESOL Cambridge)

Working experiences

AImageLab - University of Modena and Reggio Emilia *Modena, Italy*
Research grant *July 2023 - (July 2024)*
Supervisor: Prof. Roberto Vezzani
Project: *"AI platform with digital twins of interacting robots and people"*

AImageLab - University of Modena and Reggio Emilia *Modena, Italy*
Research grant *June 2022 - June 2023*
Supervisor: Prof. Roberto Vezzani
Project: *"Study of recent combinations of CNN and Vision Transformer architectures"*

AImageLab - University of Modena and Reggio Emilia *Modena, Italy*
Research grant *May 2020 - May 2022*
Supervisor: Prof. Roberto Vezzani
Project: *"PREVUE - Prediction of Activities and Events by Vision in an Urban Environment"*

AImageLab - University of Modena and Reggio Emilia *Modena, Italy*
Student internship for master's degree thesis *July 2019 - Feb. 2020*
Supervisor: Prof. Rita Cucchiara
"Future urban scene generation: a deep learning approach for a 3D temporal vehicle reconstruction starting from monocular images"

Education

University of Modena and Reggio Emilia *Modena, Italy*
PhD student - Curriculum "Computer engineering and science" *Nov. 2020 - (Mar. 2024)*
Supervisor: Prof. Roberto Vezzani

University of Modena and Reggio Emilia *Modena, Italy*
Master's degree in computer engineering *Sep. 2017 - Feb. 2020*
- GPA: 27.806/30. Final grade: 108/110

University of Modena and Reggio Emilia *Modena, Italy*
Bachelor's degree in computer engineering *Sep. 2013 - Feb. 2017*
- GPA: 23.607/30. Final grade: 91/110

Certifications

First Certificate in English (FCE)

Grade A (Score 180, C1), University of Cambridge ESOL Examinations *Dec. 2020*

Italian State certification exam for Engineer Profession

Association of Engineers *2021*

4th **Advanced Course on Data Science and Machine Learning (ACDL 2021)**

Participation certificate with final exam *July 2021*

16th **International Computer Vision Summer School (ICVSS 2022)**

Participation certificate with final exam *July 2022*

ELLIS Summer School on Large-Scale AI for Research and Industry

Participation certificate with final project (NeRF-based camera optimization) *Sept. 2023*

Additional information

Citizenship Italian, German
Travelling Passport, B license, own car

Speaker at conferences

35th **IEEE/RSJ International Conference on Intelligent Robots and Systems** *Kyoto, Japan*

21st **International Conference on Image Analysis and Processing** *Lecce, Italy*

9th **International Conference on 3D Vision** *Virtual, Online*

16th **VISIGRAPP** *Virtual, Online*

25th **International Conference on Pattern Recognition** *Virtual, Online*

Journals and conferences activities

2nd **T-CAP 2022 Workshop at ICPR2022** *Montreal, Canada*

Technical Program Committee *21-25 Aug. 2022*

1st **T-CAP 2021 Workshop at ICIAP2021** *Lecce, Italy*

Technical Program Committee *23-27 Mag. 2022*

16th **VISIGRAPP** *Virtual, Online*

Session chair *8-10 Feb. 2021*

Reviewing activities

IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)

IEEE International Conference on Pattern Recognition (ICPR)

IEEE Robotics and Automation Letters (RA-L)

Towards a Complete Analysis of People: From Face and Body to Clothes (T-CAP)

International Workshop and Challenge on People Analysis (WCPA)

Teaching activities

School in AI: Deep Learning, Vision and Language for Industry - first edition *Modena, Italy*

Laboratory Lecturer - 3D Computer Vision *Feb. 2022*

School in AI: Deep Learning, Vision and Language for Industry - second edition *Modena, Italy*

Laboratory Lecturer - 3D Computer Vision *Sept. 2022*

Thesis supervision

MSc Thesis (G. Doganieri)
"3D Multi-Person Pose Estimation and Skeleton tracking by a single RGB camera" *Feb. 2022*

Publications

More info on Google Scholar.

Journals

Pattern Recognition Letters (PRL)
A. D'Eusanio, A. Simoni, S. Pini, G. Borghi, R. Vezzani, R.Cucchiara
"Depth-based 3D human pose refinement: Evaluating the refinet framework" *Mar. 2023*

Computers & Graphics
A. Caputo, A. Giacchetti, S. Soso, D. Pintani, A. D'Eusanio, S. Pini, G. Borghi, A. Simoni, R. Vezzani,
R. Cucchiara, et al. *Oct. 2021*
"SHREC 2021: skeleton-based hand gesture recognition in the wild"

Informatics
A. D'Eusanio, A. Simoni, S. Pini, G. Borghi, R. Vezzani, R. Cucchiara
"Multimodal hand gesture classification for the human-car interaction" *Aug. 2020*

Conferences

23rd **International Conference on Image Analysis and Processing** *Udine, Italy*
D. Di Nucci, A. Simoni, M. Tomei, L. Ciuffreda, R. Vezzani, R. Cucchiara
"CarPatch: A Synthetic Benchmark for Radiance Field Evaluation on Vehicle Components" *11-15 Sept. 2023*

35th **International Conference on Intelligent Robots and Systems + RA-L** *Kyoto, Japan*
A. Simoni, S. Pini, G. Borghi, R. Vezzani
"Semi-Perspective Decoupled Heatmaps for 3D Robot Pose Estimation from Depth Maps" *23-27 Oct. 2022*

21st **International Conference on Image Analysis And Processing** *Lecce, Italy*
S. Pini, G. Borghi, A. D'Eusanio, A. Simoni, R. Vezzani
"Unsupervised detection of dynamic hand gestures from leap motion data" *23-27 Mag. 2022*

9th **International Conference on 3D Vision** *Virtual, Online*
A. Simoni, S. Pini, R. Vezzani, R. Cucchiara
"Multi-category mesh reconstruction from image collections" *1-3 Dec. 2021*

16th **VISIGRAPP** *Virtual, Online*
A. Simoni, A. D'Eusanio, S. Pini, G. Borghi, R. Vezzani
"Improving car model classification through vehicle keypoint localization" *8-10 Feb. 2021*

16th **VISIGRAPP** *Virtual, Online*
L. Bergamini, S. Pini, A. Simoni, R. Vezzani, S. Calderara, R. B. D'Eath, R. B. Fisher
"Extracting accurate long-term behavior changes from a large pig dataset" *8-10 Feb. 2021*

25th **International Conference on Pattern Recognition** *Virtual, Online*
A. Simoni, L. Bergamini, A. Palazzi, S. Calderara, R. Cucchiara
"Future urban scene generation through vehicle synthesis" *10-15 Jan. 2021*

8th **International Conference on 3D Vision** *Virtual, Online*
A. D'Eusanio, A. Simoni, S. Pini, G. Borghi, R. Vezzani, R. Cucchiara
"A transformer-based network for dynamic hand gesture recognition" *25-28 Nov. 2020*