

# Alessandro Simoni

PhD Student @ Department of Engineering “Enzo Ferrari”

**Birth date (day/month/year):** 27/09/1994

**Address:** Via Monsignor Luigi della Valle, 36, 41126, Modena, Italy

**Contacts:** ☎ (+39) 3348040595 | 📩 alle.simoni.as@gmail.com | 🏷 alexj94.github.io



## Summary

He is a PhD student under the tutorship of Prof. Roberto Vezzani at the International Doctorate School in ICT (Unimore, Italy) with the following research topic: “Computer Vision and Artificial Intelligence for Collaborative Robotic Environments”.

His main interests are in Human-centric AI and Robotics exploiting deep learning and computer vision techniques applied to the 3D world.

## Knowledge and computer skills

**Programming languages** Python, C++, HTML, JavaScript

**Libraries and Tools** PyTorch, NumPy, OpenCV, PyCharm

**Domains** Deep Learning, 2D/3D Computer Vision, 3D Reconstruction, 3D Human/Robot Pose Estimation

**Spoken languages** Italian mothertongue, English C1 (certified ESOL Cambridge)

## Working experiences

### AlmageLab - University of Modena and Reggio Emilia

Modena, Italy

Research fellow

May 2020 - Nov. 2020

**Supervisor:** Prof. Roberto Vezzani

**Research project:** “PREVUE - Prediction of Activities and Events by Vision in an Urban Environment”

- Generation of new viewpoints through the prediction of 3D geometry and appearance in an urban environment.
- Study, analysis and design of algorithms to estimate the 3D geometry of a scene predicting new views of vehicles in urban scenarios.

### AlmageLab - University of Modena and Reggio Emilia

Modena, Italy

Student internship for master's degree thesis

Jul. 2019 - Feb. 2020

**Supervisor:** Prof. Rita Cucchiara

**Thesis title:**

“Future urban scene generation: a deep learning approach for a 3D temporal vehicle reconstruction starting from monocular images”

- Study of modern architectures in the context of computer vision and artificial intelligence reading scientific papers
- Use of neural networks developed in PyTorch
- Use of 3D geometry for solving object reprojection problems from 3D to 2D

## Education

### University of Modena and Reggio Emilia

Modena, Italy

PhD student - Curriculum “Computer engineering and science”

Nov. 2020 - ongoing

**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

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### First Certificate in English (FCE)

Grade A (Score 180), University of Cambridge ESOL Examinations

Dec. 2020

### 4<sup>th</sup> Advanced Course on Data Science and Machine Learning (ACDL 2021)

Participation certificate with final exam

Jul. 2021

### 16<sup>th</sup> International Computer Vision Summer School (ICVSS 2022)

Participation certificate with final exam

Jul. 2022

## Selected publications

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Complete list on [Google Scholar](#).

### JOURNALS

#### IEEE Robotics and Automation Letters (RA-L)

A. Simoni, S. Pini, G. Borghi, R. Vezzani

Oct. 2022

“Semi-Perspective Decoupled Heatmaps for 3D Robot Pose Estimation from Depth Maps”

### Informatics

A. D'Eusanio, A. Simoni, S. Pini, G. Borghi, R. Vezzani, R. Cucchiara

Aug. 2020

“Multimodal hand gesture classification for the human-car interaction”

### CONFERENCES

#### 9<sup>th</sup> International Conference on 3D Vision

*Virtual, Online*

A. Simoni, S. Pini, R. Vezzani, R. Cucchiara

1-3 Dec. 2021

“Multi-category mesh reconstruction from image collections”

#### 16<sup>th</sup> VISIGRAPP

*Virtual, Online*

A. Simoni, A. D'Eusanio, S. Pini, G. Borghi, R. Vezzani

8-10 Feb. 2021

“Improving car model classification through vehicle keypoint localization”

#### 25<sup>th</sup> International Conference on Pattern Recognition

*Virtual, Online*

A. Simoni, L. Bergamini, A. Palazzi, S. Calderara, R. Cucchiara

10-15 Jan. 2021

“Future urban scene generation through vehicle synthesis”

#### 8<sup>th</sup> International Conference on 3D Vision

*Virtual, Online*

A. D'Eusanio, A. Simoni, S. Pini, G. Borghi, R. Vezzani, R. Cucchiara

25-28 Nov. 2020

“A transformer-based network for dynamic hand gesture recognition”

## Additional information

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**Citizenship** Italian, German

**Travelling** Passport, B license, own car