



# Alessandro Simoni

PHD STUDENT @ DEPARTMENT OF ENGINEERING “ENZO FERRARI”

Birth date: 27<sup>th</sup> September 1994

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## Summary

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Got a Master’s Degree in Computer Engineering with a curriculum specialization called “Intelligent Cyber Systems”, which focused on the SW development of systems in the context of computer vision, machine learning, web/mobile applications and computer security.

Worked as a research fellow at the AlmageLab Research Laboratory; my research activity had the goal to predict an urban scene from different perspectives combining computer vision, deep learning and 3D geometry. This work was related to the topic of his master’s degree thesis.

Currently, I am a PhD student under the tutorship of Prof. Roberto Vezzani at the International Doctorate in ICT (UniMoRe) with the following research topic: “Computer Vision and Artificial Intelligence for Collaborative Robotic Environments”.

Recently, my main interest is in robotics and in the future I would like to work in this research area using deep learning and computer vision techniques applied to the 3D world.

## Knowledge and computer skills

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**Programming languages** Python, Javascript, HTML, CSS, Java, C, C++

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

**Expertise** Computer Vision, Deep Learning, Machine Learning, Development of web/mobile applications

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

## Working experiences

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### AlmageLab - Università degli Studi di Modena e Reggio Emilia

Modena, Italy

RESEARCH FELLOW

May 2020 - Nov. 2020

**Supervisor:** Prof. Roberto Vezzani

- 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 - Università degli Studi di Modena e Reggio Emilia

Modena, Italy

STUDENT INTERNSHIP FOR MASTER’S DEGREE THESIS

Jul. 2019 - Feb. 2020

**Thesis:** “Future urban scene generation: a deep learning approach for a 3D temporal vehicle reconstruction starting from monocular images”  
**Supervisor:** Prof. Rita Cucchiara

- Study of modern architecture in the context of computer vision and artificial intelligence reading scientific papers
- Use of Python programming language and of PyCharm development environment
- Use of neural networks developed in PyTorch
- Use of 3D geometry for solving object reprojection problems from 3D to 2D

## Education

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### University of Modena and Reggio Emilia

Modena, Italy

PHD IN ICT - CURRICULUM ”COMPUTER ENGINEERING AND SCIENCE”

Nov. 2020 - Present

**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

## Classical high school “L.A. Muratori”

Modena, Italy

CLASSICAL HIGH SCHOOL DIPLOMA

2008 - 2013

- Final grade: 79/100

## Certifications

Dec. 2020 - **First Certificate in English (FCE)**, Grade A (Score 180), University of Cambridge ESOL Examinations

Modena, Italia

Jul. 2021 - **4<sup>th</sup> Advanced Course on Data Science and Machine Learning (ACDL 2021)**, Participation certificate

Siena, Italy

## Publications - Journals

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

A. SIMONI, S. PINI, G. BORGHI, R. VEZZANI

Jun. 2022

“SEMI-PERSPECTIVE DECOUPLED HEATMAPS FOR 3D ROBOT POSE ESTIMATION FROM DEPTH MAPS”

Accepted on June 26th, 2022.

### Computers & Graphics, Vol.99, pp.201-211

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”

<http://dx.doi.org/10.1016/j.cag.2021.07.007>

### INFORMATICS 2020, 7(3), 31

A. D'EUSANIO, A. SIMONI, S. PINI, G. BORGHI, R. VEZZANI, R. CUCCHIARA

Aug. 2020

“MULTIMODAL HAND GESTURE CLASSIFICATION FOR THE HUMAN-CAR INTERACTION”

<http://dx.doi.org/10.3390/informatics7030031>

## Publications - Conferences

### 21<sup>st</sup> International Conference on Image Analysis And Processing (ICIAP 2021)

Lecce, Italy

S. PINI, G. BORGHI, A. D'EUSANIO, A. SIMONI, R. VEZZANI

23-27 Mag. 2022

“UNSUPERVISED DETECTION OF DYNAMIC HAND GESTURES FROM LEAP MOTION DATA”

[https://link.springer.com/chapter/10.1007/978-3-031-06427-2\\_35](https://link.springer.com/chapter/10.1007/978-3-031-06427-2_35)

### 9<sup>th</sup> International Conference on 3D Vision (3DV 2021), pp. 1321-1330

Virtual, Online

A. SIMONI, S. PINI, R. VEZZANI, R. CUCCHIARA

1-3 Dec. 2021

“MULTI-CATEGORY MESH RECONSTRUCTION FROM IMAGE COLLECTIONS”

<https://dx.doi.org/10.1109/3DV53792.2021.00139>

### 16<sup>th</sup> International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISIGRAPP 2021), Vol.5, pp. 354-361

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”

<http://dx.doi.org/10.5220/0010207803540361>

### 16<sup>th</sup> International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISIGRAPP 2021), Vol.5, pp. 524-533

Virtual, Online

L. BERGAMINI, S. PINI, A. SIMONI, R. VEZZANI, S. CALDERARA, R. B. D'EATH, R. B. FISHER

8-10 Feb. 2021

“EXTRACTING ACCURATE LONG-TERM BEHAVIOR CHANGES FROM A LARGE PIG DATASET”

<http://dx.doi.org/10.5220/0010288405240533>

### 25<sup>th</sup> International Conference on Pattern Recognition (ICPR 2020), pp. 4552-4559

Virtual, Online

A. SIMONI, L. BERGAMINI, A. PALAZZI, S. CALDERARA, R. CUCCHIARA

10-15 Jan. 2021

“FUTURE URBAN SCENE GENERATION THROUGH VEHICLE SYNTHESIS”

<http://dx.doi.org/10.1109/ICPR48806.2021.9412880>

**8<sup>th</sup> International Conference on 3D Vision (3DV 2020), pp. 623-632**

*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"

<http://dx.doi.org/10.1109/3DV50981.2020.00072>

## **Activities at journals and conferences**

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**2<sup>nd</sup> T-CAP 2022 Workshop at ICPR2022**

*Montreal, Canada*

TECHNICAL PROGRAM COMMITTEE

(21-25 Aug. 2022)

**1<sup>st</sup> T-CAP 2021 Workshop at ICIAP2021**

*Lecce, Italy*

TECHNICAL PROGRAM COMMITTEE

23-27 Mag. 2022

**16<sup>th</sup> International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISIGRAPP 2021)**

*Virtual, Online*

SESSION CHAIR

8-10 Feb. 2021

## **Additional information**

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**Citizenship** Italian, German

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