

UNIVERSITÀ DEGLI STUDI DI MILANO

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per il gruppo scientifico-disciplinare 01/INFO-01 - Informatica,

settore scientifico-disciplinare INFO-01/A - Informatica

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Thomas Alessandro Ciarfuglia

CURRICULUM VITAE

INFORMAZIONI PERSONALI

COGNOME	CIARFUGLIA
NOME	THOMAS ALESSANDRO

TITOLI

TITOLO DI STUDIO

(indicare la Laurea conseguita inserendo tipologia e relativo punteggio, Ateneo, titolo della tesi, data di conseguimento, ecc.)

Laurea quinquennale in ingegneria Elettronica (vecchio ordinamento), Università degli Studi di Perugia, 02/07/2004, 110/110 e lode. Titolo della tesi: "Studio e implementazione di un codificatore JPEG2000"

TITOLO DI DOTTORE DI RICERCA O EQUIVALENTI, OVVERO, PER I SETTORI INTERESSATI, DEL DIPLOMA DI SPECIALIZZAZIONE MEDICA O EQUIVALENTE, CONSEGUITO IN ITALIA O ALL'ESTERO

(inserire tipologia del titolo e relativo punteggio, Ateneo, titolo della tesi, data di conseguimento, ecc.)

Dottorato di ricerca in Ingegneria dell'Informazione, Università degli studi di Perugia, 29/11/2012. Titolo della tesi: "Machine Learning Approaches to Visual Robot Navigation and Mapping"

CONTRATTI DI RICERCA, ASSEGNI DI RICERCA O EQUIVALENTI

(per ciascun contratto stipulato, inserire tipologia, università/ente, durata in anni / data di inizio e fine, ecc.)

- contratto di ricercatore a tempo determinato di tipologia A stipulato ai sensi dell'art. 24, comma 3, lett. a) della legge 30 dicembre 2010, n. 240, presso Sapienza Università di Roma dal 01/02/2021 al 31/01/2026;
- assegno di ricerca presso UNIVERSITÀ DEGLI STUDI DI PERUGIA dal 01/01/2012 al 31/12/2012;
- assegno di ricerca presso UNIVERSITÀ DEGLI STUDI DI PERUGIA dal 01/01/2013 al 31/12/2013;
- assegno di ricerca presso UNIVERSITÀ DEGLI STUDI DI PERUGIA dal 02/01/2014 al 01/12/2014;
- assegno di ricerca presso UNIVERSITÀ DEGLI STUDI DI PERUGIA dal 01/12/2014 al 01/12/2015;
- assegno di ricerca presso UNIVERSITÀ DEGLI STUDI DI PERUGIA dal 15/12/2015 al 14/12/2016;
- assegno di ricerca presso UNIVERSITÀ DEGLI STUDI DI PERUGIA dal 15/12/2016 al 14/12/2017;

ATTIVITÀ DIDATTICA A LIVELLO UNIVERSITARIO IN ITALIA O ALL'ESTERO

(inserire tipologia dell'attività, periodo [gg/mm/aa inizio e fine], anno accademico, ateneo, denominazione del corso, numero ore/CFU, ecc.)

- Docente del corso di “Intelligenza Artificiale 2” (6CFU) presso l'Università degli Studi di Roma “La Sapienza”, a.a. 2024-25
- Docente del corso di “Laboratorio di Intelligenza Artificiale” (6CFU) presso l'Università degli Studi di Roma “La Sapienza”, a.a. 2021-22, 2022-23, 2023-24
- Docente del corso di “Abilità informatiche” (4CFU) presso l'Università degli studi della Tuscia, a.a. 2023-24
- Docente del modulo di informatica nel corso “Principi di Elettronica e Strumentazione Biomedica”, (1CFU) presso l'Università degli Studi di Roma “La Sapienza”, a.a. 2022/23, 2023/24, 2024/25
- Docente del corso di dottorato “Scientific Methods and Theories of Science” (1.5 CFU) presso l'Università degli Studi di Roma “La Sapienza”, a.a. 2022-23 e 2023-24
- Docente del corso di dottorato “Vision and Perception in Human-Robot Interaction” (1.5 CFU) presso l'Università degli Studi di Roma “La Sapienza”, a.a. 2020-21 e 2021-22
- Docente del corso di “Laboratorio di Intelligenza Artificiale e Informatica Grafica” (6 CFU) presso l'Università degli Studi di Roma “La Sapienza”, a.a. 2020-21
- Docente a contratto per il corso di “Machine Learning and Data Mining” (9 CFU) presso l'Università degli studi di Perugia, a.a. 2016-17 e 2017-18
- IEEE Distinguished Lecturer, First IEEE Italy Section Summer School, Perugia, Italia, Giugno 21-28.
- Docente del Corso di Ottimizzazione e Controllo, Laurea Magistrale in Ingegneria Informatica e dell'Automazione, Modulo di Robotica Mobile (30h), Università degli Studi di Perugia, a.a. 2013/14, 2014/15, 2015/16
- Docente per il corso “Tecniche di analisi basate su Apprendimento Automatico”, nel Master in Agricoltura di Precisione, (6h), Università della Tuscia.

DOCUMENTATA ATTIVITÀ DI FORMAZIONE O DI RICERCA PRESSO QUALIFICATI ISTITUTI ITALIANI O STRANIERI

(inserire tipologia dell'attività, anno/anno accademico, ente, periodo, impegno in termini orari, ecc.)

- from 2021 to present: research activities in the RoCoCo Lab, Sapienza University of Rome, Department of Computer, Control and Management Engineering, led by Prof. Daniele Nardi;
- from 2012 to 2018: research activities with the ISARLab, University of Perugia, Department of Engineering, led by Prof. Paolo Valigi;
- Visiting PhD Student, Autonomous System Lab, ETH Zurich, sotto la supervisione del Prof. Davide Scaramuzza.

REALIZZAZIONE DI ATTIVITÀ PROGETTUALE

(indicare descrizione dell'attività, durata, eventuale ente a favore del quale è stata realizzata l'attività, ecc.)

- [PI] Vincitore di un finanziamento di 101.000,00€ per il progetto Digital Twin City nell'ambito del bando di finanziamento regionale Riposizionamento Competitivo RSI di Lazio Innova.
- [PI] Vincitore di un finanziamento di 36.787,00€ nell'ambito dei progetti di ateneo dell'Università degli studi di Roma “La Sapienza” per il progetto intitolato: “H&M: Hyperspectral and Multispectral Fruit Sugar Content Estimation for Robot Harvesting Operations in Difficult Environments”

ORGANIZZAZIONE, DIREZIONE E COORDINAMENTO DI CENTRI O GRUPPI DI RICERCA NAZIONALI E INTERNAZIONALI O PARTECIPAZIONE AGLI STESSI

(per ciascuna voce inserire tipologia di progetto, titolo del progetto, anno, durata, eventuale ente finanziatore e importo del finanziamento, ruolo, gruppo di ricerca, ecc.)

- Co-Principal Investigator del progetto di ricerca EU “A Collaborative Paradigm for Human Workers and Multi-Robot Teams in Precision Agriculture Systems (CANOPIES)”, grant n. 101016906, per i Work Packages di competenza dell’Università degli Studi di Roma, “La Sapienza”,
doi: <https://doi.org/10.3030/101016906>
- Co-PI per il progetto di ricerca nazionale (Bando MIUR) [Smart Cities S.E.A.L.](#) (SCN_00398)
- Partecipazione alle attività di ricerca del gruppo RoCoCo, Dipartimento di Ingegneria Informatica, Automatica e Gestionale “Antonio Ruberti”, Università degli Studi di Roma “La Sapienza”, diretto dal Prof. Daniele Nardi
- Partecipazione alle attività di ricerca del gruppo ISARLab, Dipartimento di Ingegneria, Università degli Studi di Perugia, diretto dal Prof. Paolo Valigi

ATTIVITÀ DI RELATORE A CONGRESSI E CONVEGNI NAZIONALI E INTERNAZIONALI

(inserire titolo congresso/convegno, data, durata in giorni/ore, ente organizzatore, ecc.)

- European Robotics Forum 2024: Organizzatore del Workshop “Cultivating Efficiency: Enhancing Agriculture through Robotics and AI”
- IEEE ICVS 2023: Invited speaker al Workshop in “Computer vision systems for robots in agricultural applications and precision farming”

CONSEGUIMENTO DI PREMI E RICONOSCIMENTI NAZIONALI E INTERNAZIONALI PER ATTIVITÀ DI RICERCA

(inserire nome e motivazione del premio, data, ente erogatore, ecc.)

- Best Robotic Vision Paper Award Finalist, per il paper “Exploring representation learning with CNNs for frame-to-frame ego-motion estimation”, IEEE ICRA 2016 Conference, Stocholm.
<https://ewh.ieee.org/soc/ras/conf/fullysponsored/icra/2016/www.icra2016.org/conference/awards/index.html>

RELATORE A CONGRESSI E CONVEGNI NAZIONALI E INTERNAZIONALI:

- Relatore alla conferenza internazionale “International Conference on Intelligent Robots and Systems (IROS)”, 2012 IEEE/RSJ, Villamoura. Portogallo, Ottobre 7-12.
- Relatore alla conferenza internazionale “International Conference on Intelligent Robots and Systems (IROS)”, 2013 IEEE/RSJ, Tokyo. Giappone, Novembre 3-7.
- Relatore alla conferenza internazionale “International Conference on Intelligent Robots and Systems (IROS)”, 2016 IEEE/RSJ, Daejeon, Corea del Sud, Ottobre 9-14.
- Relatore alla conferenza internazionale “International Conference of Robotics and Automation (ICRA)”, 2016 IEEE/RSJ, Stockholm, Svezia, Maggio 16-21.
- Relatore alla conferenza internazionale “International Conference of Robotics and Automation (ICRA)”, 2018 IEEE/RSJ, Brisbane, Australia, Maggio 21-25.
- Relatore al Workshop della conferenza internazionale “International Conference on Computer Vision and Pattern Recognition (CVPR)”, 2022 IEEE/CVF, New Orleans Louisiana, Giugno 19-24.
- Session Chair alla conferenza internazionale “International Conference of Robotics and Automation (ICRA)”, 2024 IEEE/RSJ, Yokohama, Giappone, Maggio 12-17.

DIREZIONE O PARTECIPAZIONE A COMITATI EDITORIALI DI RIVISTE, COLLANE EDITORIALI, CONFERENZE (INCLUSA LA PARTECIPAZIONE NEL COMITATO DI PROGRAMMA), ENCICLOPEDIE E TRATTATI DI RICONOSCIUTO PRESTIGIO

- Associate Editor per IEEE International Conference of Robot Operating Systems (IROS) per gli anni 2023 e 2024

Summary of Scientific Achievements

- Number of international papers: **27** (G Scholar) / **25** (Scopus)
- Total Impact Factor **18.61**;
- Average Impact Factor (computed on products with IF): **4.65**
- Total Citations: **1052** (G Scholar) / **743** (Scopus)
- Hirsch (H) index: **14** (G Scholar) / **13** (Scopus)

TITOLI DI CUI ALL'ARTICOLO 24 COMMA 3 LETTERA A) E B) DELLA LEGGE 30 DICEMBRE 2010, N. 240
(indicare se contratto di tipologia A o B, Ateneo, data di decorrenza e fine contratto/periodo/durata in anni, ecc.)

- contratto di ricercatore a tempo determinato di tipologia A stipulato ai sensi dell'art. 24, comma 3, lett. a) della legge 30 dicembre 2010, n. 240, presso Sapienza Università di Roma dal 01/02/2021 al 31/01/2026;

PRODUZIONE SCIENTIFICA

PUBBLICAZIONI SCIENTIFICHE

(per ciascuna pubblicazione indicare: nomi degli autori, titolo completo, casa editrice, data e luogo di pubblicazione, codice ISBN, ISSN, DOI o altro equivalente)

Self-Supervised Data Generation for Precision Agriculture: Blending Simulated Environments with Real Imagery, Leonardo Saraceni, Ionut M. Motoi, Daniele Nardi, Thomas Ciarfuglia, IEEE 20th International Conference on Automation Science and Engineering (CASE), August 2024.
<https://doi.org/10.1109/CASE59546.2024.10711594>

Evaluating the Efficacy of Cut-and-Paste Data Augmentation in Semantic Segmentation for Satellite Imagery, Ionut M. Motoi, Leonardo Saraceni, Daniele Nardi, Thomas Ciarfuglia, IEEE International Geoscience and Remote Sensing Symposium (IGARSS), July 2024.
<https://doi.org/10.1109/IGARSS53475.2024.10640734>

AgriSORT: A Simple Online Real-time Tracking-by-Detection framework for robotics in precision agriculture, Leonardo Saraceni, Ionut M. Motoi, Daniele Nardi, Thomas Ciarfuglia, IEEE International Conference on Robotics and Automation (ICRA), May 2024.
<https://doi.org/10.1109/ICRA57147.2024.10610231>

Weakly and semi-supervised detection, segmentation and tracking of table grapes with limited and noisy data, Thomas A. Ciarfuglia, Ionut M. Motoi, Leonardo Saraceni, Mulham Fawakherji, Alberto Sanfeliu, Daniele Nardi, Computers and Electronics in Agriculture, February 2023, Elsevier.
IF: 8.3;
<https://doi.org/10.1016/j.compag.2023.107624>

Pseudo-Label Generation for Agricultural Robotics Applications, Thomas A. Ciarfuglia, Ionut M. Motoi, Leonardo Saraceni, Daniele Nardi, Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops,
<https://doi.org/10.1109/CVPRW56347.2022.00175>

The Role of the Input in Natural Language Video Description, Silvia Cascianelli, Gabriele Costante, Alessandro Devo, Thomas A. Ciarfuglia, Paolo Valigi and Mario L. Fravolini, IEEE Transactions on Multimedia, June 2019.
IF: 6.051;
<https://doi.org/10.1109/TMM.2019.2924598>

Weakly Supervised Fruit Counting for Yield Estimation Using Spatial Consistency, Enrico Bellocchio, Thomas A. Ciarfuglia, Gabriele Costante and Paolo Valigi, IEEE Robotics and Automation Letters, July 2019, IF: 3.608.

<https://doi.org/10.1109/LRA.2019.2903260>

LS-VO: Learning Dense Optical Subspace for Robust Visual Odometry Estimation, Gabriele Costante, Thomas A Ciarfuglia, IEEE Robotics and Automation Letters Systems, Feb 2018.

<https://doi.org/10.1109/LRA.2018.2803211>

J-MOD2: Joint Monocular Obstacle Detection and Depth Estimation, Michele Mancini, Gabriele Costante, Paolo Valigi, Thomas A Ciarfuglia, IEEE Robotics and Automation Letters, Jan 2018.

<https://doi.org/10.1109/LRA.2018.2800083>

Full-GRU Natural Language Video Description for Service Robotics Applications, Silvia Cascianelli, Gabriele Costante, Thomas A Ciarfuglia, Paolo Valigi, Mario L Fravolini, Robotics and Automation Letters, Jan 2018.

<https://doi.org/10.1109/LRA.2018.2793345>

Towards Monocular Digital Elevation Model (DEM) Estimation by Convolutional Neural Networks - Application on Synthetic Aperture Radar Images, Gabriele Costante, Thomas A Ciarfuglia, Filippo Biondi, 12th European Conference on Synthetic Aperture Radar, EUSAR 2018.

Print ISBN:978-3-8007-4636-1

Robust visual semi-semantic loop closure detection by a covisibility graph and CNN features, Silvia Cascianelli, Gabriele Costante, Enrico Bellocchio, Paolo Valigi, Mario L Fravolini, Thomas A Ciarfuglia, Robotics and Autonomous Systems, 2017, IF: 2.638.

<https://doi.org/10.1016/j.robot.2017.03.004>

Towards Domain Independence for Learning-Based Monocular Depth Estimation, Michele Mancini, Gabriele Costante, Paolo Valigi, Thomas Alessandro Ciarfuglia, Jeffrey Delmerico, Davide Scaramuzza, IEEE Robotics and Automation Letters, 2017.

<https://doi.org/10.1109/LRA.2017.2657002>

Exploring representation learning with CNNs for frame-to-frame ego-motion estimation, Gabriele Costante, Michele Mancini, Paolo Valigi, Thomas A Ciarfuglia, IEEE Robotics and Automation Letters, 2016.

<https://doi.org/10.1109/LRA.2015.2505717>

Fast robust monocular depth estimation for Obstacle Detection with fully convolutional networks, Michele Mancini, Gabriele Costante, Paolo Valigi, Thomas A Ciarfuglia, Intelligent Robots and Systems (IROS), 2016 IEEE/RSJ International Conference on, 2016.

<https://doi.org/10.1109/IROS.2016.7759632>

SmartSEAL: A ROS based home automation framework for heterogeneous devices interconnection in smart buildings, Enrico Bellocchio, Gabriele Costante, Silvia Cascianelli, Paolo Valigi, Thomas A Ciarfuglia, Smart Cities Conference (ISC2), 2016 IEEE International, 2016.

<https://doi.org/10.1109/ISC2.2016.7580798>

A robust semi-semantic approach for visual localization in urban environment, Silvia Cascianelli, Gabriele Costante, Enrico Bellocchio, Paolo Valigi, Mario L Fravolini, Thomas A Ciarfuglia, Smart Cities Conference (ISC2), 2016 IEEE International, 2016.

<https://doi.org/10.1109/ISC2.2016.7580799>

Modelling and Simulation of a Quadrotor in V-tail Configuration, Enrico Bellocchio, Thomas A. Ciarfuglia, Francesco Crocetti, Antonio Ficola, Paolo Valigi, International Journal of Modelling Identification and Control, Inderscience Publishers.

2015 Transferring knowledge across robots: A risk sensitive approach, Gabriele Costante, Thomas A Ciarfuglia, Paolo Valigi, Elisa Ricci, Robotics and Autonomous Systems, Elsevier, 2015, IF: 1.618.

<https://doi.org/10.1504/IJMIC.2016.078330>

A Preliminary Experimental Analysis of V-tail Quad-Rotor Dynamics, Thomas A. Ciarfuglia, Francesco Crocetti, Antonio Ficola, Paolo Valigi, International Conference on Modelling, Identification and Control (ICMIC 2014), Proceedings of. 2014 Evaluation of Non-Geometric Methods for Visual Odometry, Ciarfuglia, T.A.; Costante, G.; Valigi, P.; Ricci, E., Robotics and Autonomous Systems, Elsevier, 2014, IF:1.236.

<https://doi.org/10.1109/ICMIC.2014.7020765>

Transfer Learning for Visual Place Classification, Costante, G.; Ciarfuglia, T.A.; Valigi, P. and Ricci, E., RSS Workshop on Robots in Clutter: Preparing robots for the real world. 2013.

A transfer learning approach for multi-cue semantic place recognition, Costante, G.; Ciarfuglia, T.A; Valigi, P.; Ricci, E., Intelligent Robots and Systems (IROS), 2013.

<https://doi.org/10.1109/IROS.2013.6696653>

Visual-inertial tracking on Android for Augmented Reality applications, Porzi, L.; Ricci, E.; Ciarfuglia, T.A; Zanin, M., Environmental Energy and Structural Monitoring Systems (EESMS), 2012 IEEE Workshop on.

<https://doi.org/10.1109/EESMS.2012.6348402>

A discriminative approach for appearance based loop closing, Ciarfuglia, T.A; Costante, G.; Valigi, P.; Ricci, E., Intelligent Robots and Systems (IROS), 2012.

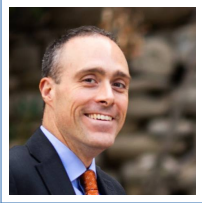
<https://doi.org/10.1109/IROS.2012.6385654>

Data

19/12/2024

Luogo

Roma



Thomas A. Ciarfuglia

Curriculum Vitae

Education

2008–2012 **Philosophy Doctorate in Computer Science**, *The University of Perugia*.

The doctorate focused on Computer Vision for robot navigation and mapping. Worked actively on the problems of Place Recognition and Camera Ego-motion Estimation, producing relevant international publications, and implementing working systems and algorithms.

Achievements:

- Learned how to conduct research
- Learned how to write and publish scientific papers
- Worked on technology transfer with industrial partners
- Coordinated and managed the work of thesis students
- Taught undergraduate and graduate classes and managed lab activities
- Main topics:
 - Automatic Non-Linear Controls
 - Robotics
 - Visual Navigation and Mapping
 - Artificial Intelligence and Machine Learning
 - Embedded Systems

2007–2008 **Master degree in Mechatronics**, *The University of Perugia*, 95/100.

The degree was a specialization course on industrial applications of automatic controls. The main topics of the course were Industrial Automation, Automatic Controls, Production Systems, Embedded Systems, Applied Mechanics and Business.

Achievements:

- Learned how to design relevant components of industrial automated machines
- Deepened the knowledge of industrial working environments and their peculiarities
- Worked in heterogeneous teams to achieve working project goals

1999–2004 **MS degree in Electronics Engineering**, *The University of Perugia*, 110/110 with *Honours*.

The degree focused in the design of electronic devices and telecommunication systems, both physical layer and protocol/software layers. Main topics: Electronics and Micro-Electronics, TLC, Mathematics and Physics

PhD Thesis

2012 **Machine Learning Approaches to Visual Robot Navigation and Mapping.**

Supervisors Professor Paolo Valigi

Description The work focused on Ego-Motion Estimation (a.k.a. Visual Odometry) using Machine Learning techniques. The problems of feature extraction from sparse optical flow, 3DOF and 6DOF training with SVMs and Gaussian Processes has been explored and compared to geometrical SotA methods. The viability of the approach have been demonstrated. Of particular relevance, the topic of Optical Flow subspace estimation was explored, and the work was seminal to initiate the Deep Learning approach to the problem.

Experience

2021–present **Assistant Professor**, DEPARTMENT OF INFORMATION, AUTOMATION AND MANAGEMENT "ANTONIO RUBERTI", Sapienza University of Rome.

Research and development in the field of Robotics, Computer Vision and Precision Agriculture.
Main responsibilities:

- Coordination of Work Packages in H2020 project CANOPIES
- Development of an Autonomous Robotic Platform for the project
- Development of the Perception pipeline for agronomic quality estimation
- Coordination of research group (1 Postdoc, 4 PhD students and several Master Students)
- Research on Computer Vision and SLAM topics

2016–present **Auxiliary Board member**, BAHÀ'I EUROPEAN BOARD OF COUNSELLORS.

Leadership role in the development of community building activities and social development in the central Italy (Lazio, Umbria, Marche and Abruzzo).

Main responsibilities:

- Identify the needs for the expansion and consolidation of the educational activities in focus neighbourhoods
- Plan quarterly and yearly to reach challenging goals
- Coordinate the efforts of individuals and groups in carrying out the plans
- Help in creating and maintaining an environment that encourages enthusiasm and discipline
- Help collaborators to keep the focus on what is needed and at the same time be prepared for facing change when it occurs
- Help collaborators to reflect on action and foster a learning environment for continuous improvement

2019 - 2021 **Applied Scientist**, CONSITALIA S.R.L., Roma.

Research and Development of Computer Vision algorithms for biometric identification.

Main responsibilities:

- Development of data pipelines for biometric recognition systems (python, pandas, sklearn)
- Training of DN tensorflow models for face detection and recognition
- Backend development for biometric identification app (python, Google Firestore)
- Development of a MQTT based communication system for the communication of AI algorithms with embedded devices
- Research on Variational DN architectures

2018 **Applied Scientist**, UNIVERSITÀ DEGLI STUDI DI PERUGIA, Perugia.

Research and Development of Computer Vision algorithms for the Fashion Industry

2016–2019 **Professor of Machine Learning and Data Mining**, DEPARTMENT OF ENGINEERING, University of Perugia.

Teaching of the graduate course of Machine Learning in the Computer Science Robotics Engineering Faculty. The course had a strong component of Project Based Learning, Cooperative Learning and Gamification.

Main topics:

- Supervised learning: Linear Regression, Logistic Regression, Naive Bayes, Neural Networks
- Model Selection and Model Assessment, feature selection and regularization
- Discriminative and Generative approaches
- Unsupervised learning: PCA, K-Means and K-Medoids, GMM and Expectation Maximization

2011–2018 **Postdoctoral Researcher**, DEPARTMENT OF ENGINEERING, University of Perugia.

Research and development in the field of Robotics, Computer Vision and Data Science. Main research topics in Robotics are camera ego-motion estimation, loop closing and place recognition. All of them are investigated through the use of Machine Learning techniques. Other research interests relate to application of Data Science to Smart Buildings and Energy Consumption Forecasting.

Achievements:

- Learned how to lead a group of researchers and students in common research projects
- Taught a full semester graduate course in robotics for three consecutive years
- Participated to funded national projects (Harness, S.E.A.L.)
- Participated in negotiations for research project deals with companies

2009 **Consultant**, EXPLORA S.R.L., Perugia.

State-of-the-art and feasibility studies for a high-g centrifuge for military pilots training to be built in northern Italy.

2008 **Consultant**, PRAGMA ENGINEERING S.R.L., Terni.

Robotic platform development for project SMAS. The aim of the project was the design of a prototype robot for automatic drug delivery in hospitals.

2005–2007 **Embedded HW and SW Engineer**, HIGHTECH SOLUTIONS S.R.L., Foligno.

Design of embedded systems for heavy construction drillers. The main skills used were hw schematics and PCB design, FW programming and HMI programming, mostly in C and Java.

Academic service and Awards

2023–2024 **Associate Editor for IEEE IROS 2023 and 2024 Conferences.**

2024 **Organization of European Robotics Forum (ERF) Workshop**, *Cultivating Efficiency: Enhancing Agriculture through Robotics and AI.*

<https://erf2024.eu/programme/session/cultivating-efficiency-enhancing-agriculture-through-robotics-and-ai/>

2022–present **Supervision of two PhD students**, *Leonardo Saraceni and Ionut Marian Motoi*, Sapienza University of Rome.

2016 **Best Robotic Vision Paper Award Finalist**, *Exploring representation learning with CNNs for frame-to-frame ego-motion estimation*, IEEE ICRA 2016 Conference, Stockholm.

<https://www.icra2016.org/conference/awards/>

- 2015-2018 **Co-supervision of PhD Student**, *Silvia Cascianelli*, Università degli Studi di Perugia.
- 2012-2015 **Co-supervision of PhD Student**, *Gabriele Costante*, Università degli Studi di Perugia.
- 2011-present **Reviewer of many journal and conference papers**, Elsevier, IEEE, MDPI and others.

Projects Participation and Coordination

- 2024-now **P.I. for Regional Lazio Innova Project**, *Digital Twin City (DTC) [WP9] AI algorithms for public illumination mapping and monitoring from a moving vehicle.*, Sapienza University of Rome, and other partners., **budget 102000€**.
- 2021-now **Co-P.I. for EU H2020 CANOPIES Project**, *A Collaborative Paradigm for Human Workers and Multi-Robot Teams in Precision Agriculture Systems.*, Sapienza University of Rome, and other partners..
<https://www.canopies-project.eu/>
- 2021-now **P.I. for H&M Project Project**, *H&M: Hyperspectral and Multispectral Fruit Sugar Content Estimation for Robot Harvesting Operations in Difficult Environments.*, Sapienza University of Rome, and other partners., **budget 36500€**.
- 2014-2016 **Smart Cities SEAL Project**, *Management of industrial partners for the development of a ROS-based solution for home automation. Development of the system and supervision of the deployment.*, Università degli Studi di Perugia, Università degli Studi di Padova, Università degli Studi Roma Tor Vergata, BFT s.p.a., Vimar s.p.a., Elica s.p.a., et al..
<http://automatica.dei.unipd.it/people/cenedese/research/seal.html>
- 2017-2018 **Collaboration for a regional project: POR FESR 2014-2020 Fabbrica Contemporanea**, *Development of Neural Networks for Artificial Intelligence applications in the fashion industry.*, Università degli Studi di Perugia e Brunello Cucinelli.
<http://investor.brunellocucinelli.com/it/impresa-umanistica/fabbrica-contemporanea>
- 2010 **HARNESS Project**, *Development of Underwater Navigation Algorithms.*, Università degli Studi di Perugia ed ENEA.

Bibliometry

- Papers** Number: 27 (GScholar)/25 (Scopus)
Citations: 1052 (GScholar)/743 (Scopus)
- H index** 14 (GScholar)/13 (Scopus)
- i10 index** 16 (GScholar)

Publications

- 2024 **Self-Supervised Data Generation for Precision Agriculture: Blending Simulated Environments with Real Imagery**, *Leonardo Saraceni, Ionut M. Motoi, Daniele Nardi, Thomas Ciarfuglia*, IEEE 20th International Conference on Automation Science and Engineering (CASE), August 2024.
<https://doi.org/10.1109/CASE59546.2024.10711594>

- 2024 **Evaluating the Efficacy of Cut-and-Paste Data Augmentation in Semantic Segmentation for Satellite Imagery**, *Ionut M. Motoi, Leonardo Saraceni, Daniele Nardi, Thomas Ciarfuglia*, IEEE International Geoscience and Remote Sensing Symposium (IGARSS), July 2024.
<https://doi.org/10.1109/IGARSS53475.2024.10640734>
- 2024 **AgriSORT: A Simple Online Real-time Tracking-by-Detection framework for robotics in precision agriculture**, *Leonardo Saraceni, Ionut M. Motoi, Daniele Nardi, Thomas Ciarfuglia*, IEEE International Conference on Robotics and Automation (ICRA), May 2024.
<https://doi.org/10.1109/ICRA57147.2024.10610231>
- 2023 **Weakly and semi-supervised detection, segmentation and tracking of table grapes with limited and noisy data**, *Thomas A. Ciarfuglia, Ionut M. Motoi, Leonardo Saraceni, Mulham Fawakherji, Alberto Sanfeliu, Daniele Nardi*, Computers and Electronics in Agriculture, February 2023, Elsevier.
IF: 8.3; doi: 10.1016/j.compag.2023.107624
- 2022 **Pseudo-Label Generation for Agricultural Robotics Applications**, *Thomas A. Ciarfuglia, Ionut M. Motoi, Leonardo Saraceni, Daniele Nardi*, Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops.
- 2019 **The Role of the Input in Natural Language Video Description**, *Silvia Cascianelli, Gabriele Costante, Alessandro Devo, Thomas A. Ciarfuglia, Paolo Valigi and Mario L. Fravolini*, IEEE Transactions on Multimedia, June 2019.
IF: 6.051; doi: 10.1109/TMM.2019.2924598
- 2019 **Weakly Supervised Fruit Counting for Yield Estimation Using Spatial Consistency**, *Enrico Bellocchio, Thomas A. Ciarfuglia, Gabriele Costante and Paolo Valigi*, IEEE Robotics and Automation Letters, July 2019, IF: 3.608.
- 2018 **LS-VO: Learning Dense Optical Subspace for Robust Visual Odometry Estimation**, *Gabriele Costante, Thomas A Ciarfuglia*, IEEE Robotics and Automation Letters Systems, Feb 2018.
- 2018 **J-MOD2: Joint Monocular Obstacle Detection and Depth Estimation**, *Michele Mancini, Gabriele Costante, Paolo Valigi, Mario L Fravolini, Thomas A Ciarfuglia*, IEEE Robotics and Automation Letters, Jan 2018.
- 2018 **Full-GRU Natural Language Video Description for Service Robotics Applications**, *Silvia Cascianelli, Gabriele Costante, Thomas A Ciarfuglia, Paolo Valigi, Mario L Fravolini*, Robotics and Automation Letters, Jan 2018.
- 2018 **Towards Monocular Digital Elevation Model (DEM) Estimation by Convolutional Neural Networks - Application on Synthetic Aperture Radar Images**, *Gabriele Costante, Thomas A Ciarfuglia, Filippo Biondi*, 12th European Conference on Synthetic Aperture Radar, EUSAR 2018.
- 2017 **Robust visual semi-semantic loop closure detection by a covisibility graph and CNN features**, *Silvia Cascianelli, Gabriele Costante, Enrico Bellocchio, Paolo Valigi, Mario L Fravolini, Thomas A Ciarfuglia*, Robotics and Autonomous Systems, 2017, IF: 2.638.

- 2017 **Towards Domain Independence for Learning-Based Monocular Depth Estimation**, *Michele Mancini, Gabriele Costante, Paolo Valigi, Thomas Alessandro Ciarfuglia, Jeffrey Delmerico, Davide Scaramuzza*, IEEE Robotics and Automation Letters, 2017.
- 2016 **Exploring representation learning with CNNs for frame-to-frame ego-motion estimation**, *Gabriele Costante, Michele Mancini, Paolo Valigi, Thomas A Ciarfuglia*, IEEE Robotics and Automation Letters, 2016.
- 2016 **Fast robust monocular depth estimation for Obstacle Detection with fully convolutional networks**, *Michele Mancini, Gabriele Costante, Paolo Valigi, Thomas A Ciarfuglia*, Intelligent Robots and Systems (IROS), 2016 IEEE/RSJ International Conference on, 2016.
- 2016 **SmartSEAL: A ROS based home automation framework for heterogeneous devices interconnection in smart buildings**, *Enrico Bellocchio, Gabriele Costante, Silvia Cascianelli, Paolo Valigi, Thomas A Ciarfuglia*, Smart Cities Conference (ISC2), 2016 IEEE International, 2016.
- 2016 **A robust semi-semantic approach for visual localization in urban environment**, *Silvia Cascianelli, Gabriele Costante, Enrico Bellocchio, Paolo Valigi, Mario L Fravolini, Thomas A Ciarfuglia*, Smart Cities Conference (ISC2), 2016 IEEE International, 2016.
- 2016 **Modelling and Simulation of a Quadrotor in V-tail Configuration**, *Enrico Bellocchio, Thomas A. Ciarfuglia, Francesco Crocetti, Antonio Ficola, Paolo Valigi*, International Journal of Modelling Identification and Control, Inderscience Publishers.
- 2015 **Transferring knowledge across robots: A risk sensitive approach**, *Gabriele Costante, Thomas A Ciarfuglia, Paolo Valigi, Elisa Ricci*, Robotics and Autonomous Systems, Elsevier, 2015, IF: 1.618.
- 2014 **A Preliminary Experimental Analysis of V-tail Quad-Rotor Dynamics**, *Thomas A. Ciarfuglia, Francesco Crocetti, Antonio Ficola, Paolo Valigi*, International Conference on Modelling, Identification and Control (ICMIC 2014), Proceedings of.
- 2014 **Evaluation of Non-Geometric Methods for Visual Odometry**, *Ciarfuglia, T.A.; Costante, G.; Valigi, P; Ricci, E.*, Robotics and Autonomous Systems, Elsevier, 2014, IF:1.236.
- 2013 **Transfer Learning for Visual Place Classification**, *Costante, G.; Ciarfuglia, T.A.; Valigi, P. and Ricci, E.*, RSS Workshop on Robots in Clutter: Preparing robots for the real world. 2013.
- 2013 **A transfer learning approach for multi-cue semantic place recognition**, *Costante, G.; Ciarfuglia, T.A; Valigi, P.; Ricci, E.*, Intelligent Robots and Systems (IROS), 2013.
- 2012 **Visual-inertial tracking on Android for Augmented Reality applications**, *Porzi, L.; Ricci, E.; Ciarfuglia, T.A; Zanin, M.*, Environmental Energy and Structural Monitoring Systems (EESMS), 2012 IEEE Workshop on.
- 2012 **A discriminative approach for appearance based loop closing**, *Ciarfuglia, T.A; Costante, G.; Valigi, P.; Ricci, E.*, Intelligent Robots and Systems (IROS), 2012.

Computer skills

Proficient C++, MATLAB, PYTHON, ROS, TENSORFLOW, PYTORCH, \LaTeX , Linux

Languages

Italian	Mothertongue	
English	Proficient	<i>Conversationally fluent</i>
Japanese	Basic	<i>Basic words and phrases only</i>

Interests and Causes

- Institute of Studies in Global Prosperity (ISGP) - www.globalprosperity.org
- Community Building Projects - JYSEP - jysep.org