



Silvio Giancola

Postdoctoral Research Fellow

Education

Oct. 2016

Nov. 2013

Ph.D. in Mechanical Engineering, *Politecnico di Milano*, Italy.

Thesis in Measurement and experimental technique, focusing on 3D Computer Vision.

- **Ph.D. Visiting Student**, *King Abdullah University of Science and Technology (KAUST)*, Thuwal, Jeddah Province, Kingdom of Saudi Arabia (6 months).

Sept. 2012

Sept. 2007

M.Sc. in Mechatronics Engineering, *Institut National des Sciences Appliquées de Strasbourg (INSA), Engineer School*, Strasbourg, France.

- **Preparatory class** integrated to INSA Engineer School (2 years).
- **M.Sc. in Mechatronics Engineering** integrated to INSA Engineer School (3 years).
- **Erasmus program in Automation Engineering**, *Politecnico di Milano*, Italy (1 year).

Sept. 2007

Sept. 2004

High School, *Lycée Marc Bloch*, Bischheim, France, 14/20 - Mention Bien (Honors).
Baccalaureat Scientifique, option Science de l'Ingénieur (SI).

Graduation Thesis

Phd Thesis

Title *Metrological analysis of Time-of-Flight cameras performances for multipurpose 3D reconstruction*

Supervisors Prof. Alfredo Cigada and Remo Sala

Description Performance assessment of the Kinect V2 Time-of-Flight camera according to the ISO GUM, for large scale reconstruction using innovative Visual-Inertial registration techniques. Application to archaeological and crime scene reconstructions.

Language English, Italian (written and discussed in English)

Master Thesis

Title *Programmation offline d'une cellule robotisée à l'aide de techniques innovantes.*

Supervisors Prof. Pierre Renaud (IRCAD-INSA), Eng. Paolo Conca (ABB Robotics), Prof. Remo Sala (Politecnico di Milano)

Description Validation of innovative programming techniques for anthropomorphic robot based on automatic trajectory learning using stereoscopic vision. Realization of a prototype that duplicates painter movements for tile painting processes.

Language French, Italian (written and discussed in French)

4700 King Abdullah University of Science and Technology
Thuwal 23955-6900 – Saudi Arabia

☎ +966 531472429 • ✉ silvio.giancola@gmail.com

🌐 silviogiancola.com • **in** [silvio-giancola](https://www.linkedin.com/in/silvio-giancola)

Working Experience

- actual**
Apr. 2017
- Postdoctoral Research Fellow**, *King Abdullah University of Science and Technology (KAUST)*, Thuwal, Jeddah province, Kingdom of Saudi Arabia.
3D Computer Vision.
 - Scene Understanding.
 - Tracking.
 - Video Understanding.
 - Activity Recognition.
- Mar. 2017
Nov. 16th, 2016
- Postdoctoral Research Fellow**, *Politecnico di Milano*, Milano, Italy.
Usage of Time-of-Flight camera for biomechanical measurement.
 - Human body tracking.
 - Human fall detection.
- Mar. 2016
Nov. 2015
- Visiting PhD Student**, *King Abdullah University of Science and Technology (KAUST)*, Thuwal, Jeddah province, Kingdom of Saudi Arabia.
Robust 3D reconstruction using an Absolute Orientation Sensor.
 - 3D depth camera based on structured-light and time-of-flight technologies.
 - 3D scene reconstruction technique based on SfM, SLAM and KinectFusion.
 - Visual Inertial point cloud registration.
- Oct. 2016
Jan. 2014
- Research Fellow**, *Politecnico di Milano*, Milano, Italy.
Non-contact measurement of quantitative parameters for fruits control and positioning.
 - Grapes Brix degree measurement using spectrophotometric analysis.
 - Fruit recognition and position estimation using images and point clouds.
 - Performance assessment for multiple RGB-D cameras.
- Dec. 2013
Oct. 2012
- Embedded Software Engineer**, *Innovative Security Solutions (ISS) - Spin off Politecnico di Milano*, Via Marco d'Oggiono 18/a - 23900 Lecco (LC).
Conception of robotic solutions based on three-dimensional vision techniques.
 - Conception of embedded actuated system for fruit manipulation.
 - Vision-based solution for automation industry.
 - Robotic control based on 3D vision system such as laser blade triangulation (profilometer).
- Sept. 2012
Mar. 2012
- Internship - Master Thesis project**, *ABB Robotics Italy*, Via Luciano Lama, 33 - 20099 Sesto San Giovanni (MI) - Italy.
Validation of innovative programming techniques for anthropomorphic robot based on automatic trajectory learning using a custom trinocular vision system.
- Sept. 2011
June 2011
- Internship - Technician**, *SIEMENS Automation & Sensor*, 1, Chemin de la Sandlach - 67500 Haguenau - France.
Study, definition and realization of the qualification of autonomous test processes.
- Sept. 2010
June 2010
- Internship - Operator**, *MESSIER-BUGATTI (Safran Group)*, 1-9, Rue Antoine de Saint-Exupéry - 67120 Molsheim - France.

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Teaching Experience

Teaching Assistant

- B.Sc, ME **Industrial Measurement and Instruments**, (2 semesters).
Industrial and Information Engineering School, Politecnico di Milano, Bovisa, Italy
- B.Sc, ME **Mechanical and Thermal Measurements**, (2 semesters).
Industrial and Information Engineering School, Politecnico di Milano, Piacenza, Italy
- M.Sc, ME **Measurements**, (1 semester).
Industrial and Information Engineering School, Politecnico di Milano, Piacenza, Italy

Certifications

- Deep Learning Nano Degree**, Udacity, 09/2017.
- Stanford University Machine Learning**, Stanford University, 06/2017.
- Managing Essentials for PhDs**, Politecnico di Milano Graduate School of Business, Milano, Italy, 04-09/11/2016.
- Presenting for Impact & Persuasive Writing**, Trend 2000 Ltb, Milano, Italy, 05-07/09/2016.
- Seminario di Eccellenza "Italo Gorini" 2014**, Italian Association "Gruppo di Misure Elettriche ed Eletttroniche", Lecce, Italy, 01-05/09/2014.
- Test Of English for International Communication (TOEIC)**, 900/990.

Computer Skills

- OS Linux (Debian/Ubuntu), Windows, MacOS
- Programming C, C++, C#, Python, Java, HTML5/CSS/JavaScript, VBA, Arduino, Assembly, QtCreator, MS Visual Studio
- Vision HALCON, OpenCV, Point Cloud Libraries (PCL), MeshLab
- Simulation Matlab, Simulink, Labview, RobotStudio, Maple, Scilab
- ML / DL TensorFlow, Keras
- CAD ProEngineer (CREO), SolidWorks, AutoCAD, MSC Softwares
- Office Suite Microsoft Office, LibreOffice, G-Suite, L^AT_EX

Languages

- French Mother-tongue
- Italian Full professional proficiency (speaking, reading, writing)
- English Full professional proficiency (speaking, reading, writing)
- German Elementary

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Publications

Book

- 2018 **A Survey on 3D Cameras: Metrological Comparison of Time-of-Flight, Structured-Light and Active Stereoscopy Technologies**, *Silvio Giancola, Matteo Valenti, Remo Sala*, Springer Brief in Computer Science.

Conferences

- 2019 Giancola, Silvio, Jesus Zarzar, and Bernard Ghanem (2019). **Leveraging Shape Completion for 3D Siamese Tracking**. In: *Computer Vision and Pattern Recognition*.
- 2018 Aljahdali, Motaz, Bernard Ghanem, and Silvio Giancola (2018). **Teaching Cars to Drive**. In: *KAUST Gifted Student Program 2018*.
- 2018 Giancola, Silvio, Mohieddine Amine, Tarek Dghaily, and Bernard Ghanem (2018). **SoccerNet: A Scalable Dataset for Action Spotting in Soccer Videos**. In: *CVPR Workshop on Computer Vision in Sports*.
- 2018 Giancola, Silvio, Jens Schneider, Peter Wonka, and Bernard S Ghanem (2018). **Integration of Absolute Orientation Measurements in the KinectFusion Reconstruction pipeline**. In: *CVPR Workshop on Visual Odometry and Computer Vision Applications Based on Location Clues*.
- 2018 Müller, Matthias, Adel Bibi, Silvio Giancola, Salman Al-Subaihi, and Bernard Ghanem (2018). **TrackingNet: A Large-Scale Dataset and Benchmark for Object Tracking in the Wild**. In: *European Conference on Computer Vision*.
- 2016 Abbondanza, Paolo, Silvio Giancola, Remo Sala, and Marco Tarabini (2016). **Accuracy of the Microsoft Kinect System in the Identification of the Body Posture**. In: *International Conference on Wireless Mobile Communication and Healthcare*. Springer, Cham, pp. 289–296.
- 2016 Giancola, Silvio, Andrea Corti, Franco Molteni, and Remo Sala (2016). **Motion Capture: An Evaluation of Kinect V2 Body Tracking for Upper Limb Motion Analysis**. In: *International Conference on Wireless Mobile Communication and Healthcare*. Springer, Cham, pp. 302–309.
- 2015 Giancola, Silvio, Hermes Giberti, Remo Sala, Marco Tarabini, Federico Cheli, and Marco Garozzo (2015). **A non-contact optical technique for vehicle tracking along bounded trajectories**. In: *Journal of Physics: Conference Series*. Vol. 658. 1. IOP Publishing, p. 012010.
- 2014 Giancola, Silvio, Davide Chiarion, and Remo Sala (2014). **A robot trajectory programming method using multi-camera systems**. In: *Mechatronic and Embedded Systems and Applications (MESA), 2014 IEEE/ASME 10th International Conference on*. IEEE, pp. 1–6.

Journal

- 2017 Caplova, Zuzana, Valentina Compassi, Silvio Giancola, Daniele M Gibelli, Zuzana Obertová, Pasquale Poppa, Remo Sala, Chiarella Sforza, and Cristina Cattaneo (2017). **Recognition of children on age-different images: Facial morphology and age-stable features**. In: *Science & Justice* 57.4, pp. 250–256.

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- 2017 Giancola, Silvio, Daniele Piron, Pasquale Poppa, and Remo Sala (2017). **A Solution for Crime Scene Reconstruction using Time-of-Flight Cameras**. In: *arXiv preprint arXiv:1708.02033*.
- 2017 Tarabini, Marco, Hermes Giberti, Silvio Giancola, Matteo Sgrenzaroli, Remo Sala, and Federico Cheli (2017). **A Moving 3D Laser Scanner for Automated Underbridge Inspection**. In: *Machines* 5.4, p. 32.
- 2016 Corti, Andrea, Silvio Giancola, Giacomo Mainetti, and Remo Sala (2016). **A metrological characterization of the Kinect V2 time-of-flight camera**. In: *Robotics and Autonomous Systems* 75, pp. 584–594.
- 2015 Giancola, Silvio, Daniele Gibelli, Stefania Vergini, Sara Candosin, Debora Mazzarelli, Remo Sala, and Cristina Cattaneo (2015). **Positive identification by hand X-rays superimposition: a quantitative approach**. In:
- Patents
- 2016 **System and method for three-dimensional image reconstruction using absolute orientation sensor**, *Silvio Giancola, Bernard Ghanem, Jens Schneider, Peter Wonka*, US Patent 20180018787A1.

Reviewer

- IEEE/CVF **Computer Vision and Pattern Recognition, (CVPR)**.
- IEEE/CVF **International Conference on Computer Vision, (ICCV)**.
- CVF **European Conference on Computer Vision, (ECCV)**.
- CVF **UAVision Workshop**.
- CVF **CVSports Workshop**.
- IEEE **Transactions on Pattern Analysis and Machine Intelligence, (TPAMI)**.
- IEEE **Transactions on Instrumentation and Measurement, (TIM)**.
- IEEE **Transactions on Image Processing, (TIP)**.
- Elsevier **Neurocomputing**.
- Elsevier **Robotics and Autonomous Systems, (RAS)**.
- Elsevier **Forensic Science International, (FSI)**.

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