Silvio Giancola

Research Scientist, Computer Vision

Education

Oct. 2016 – Nov. 2013

***Ph.D.* in Computer Vision**, *Mechanical Engineering, Politecnico di Milano*, Italy.
Thesis in Measurement and Experimental Techniques, 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)*, 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).

Academic/Industrial Experience

Apr. 2020

Research Scientist, *King Abdullah University of Science and Technology (KAUST)*, Thuwal, Makkah province, Kingdom of Saudi Arabia.

- Perception for Autonomous Navigation (Detection, Tracking, Sim-to-Real Transfer)

Mar. 2020 – Apr. 2017

Postdoctoral Research Fellow, *King Abdullah University of Science and Technology (KAUST)*, Thuwal, Makkah province, Kingdom of Saudi Arabia.

- Perception for Autonomous Navigation (Detection, Tracking, Sim-to-Real Transfer)
- Sports Broadcasts Understanding (Activity Recognition, Player Detection and Tracking)

Mar. 2017 – Nov. 2016

Postdoctoral Research Fellow, *Politecnico di Milano*, Milano, Italy.
3D Cameras for Bio-Mechanical Measurements and Gait Analysis.

Mar. 2016 – Nov. 2015

Visiting PhD Student, *King Abdullah University of Science and Technology (KAUST)*, Thuwal, Makkah province, Kingdom of Saudi Arabia.
Robust 3D Reconstruction using Absolute Orientation Sensors.

Oct. 2016 – Jan. 2014

PhD Research Fellow, *Politecnico di Milano*, Milano, Italy.

- 3D Under-bridge Reconstruction for Health Structure Monitoring on Highways.
- Non-contact measurement of quantitative parameters for fruits manipulation and control.

Dec. 2013 – Oct. 2012

Embedded Software Engineer, *ISS - Spin off Politecnico di Milano*.
Perception Solutions for Robotics based on 3D Vision Measurement Techniques.

Sept. 2012 – Mar. 2012

Internship - M.Sc. Thesis project, *ABB Robotics Italy*.
Trinocular Vision for Manual Painting Motion Duplication with Anthropomorphic Robots.

Sept. 2011 – June 2011

Internship - Laboratory Technician, *SIEMENS Automation & Sensor*.
Study and Definition of Autonomous Test Processes for Pressure Sensors Qualification.

Sept. 2010 – June 2010

Internship - Chain Production, *MESSIER-BUGATTI (Safran Group)*.
Database Development to Catalog Industrial Tools in Chain Production.

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Funding/Grants/Awards

KAUST **Impact Acceleration Fund**, *(99.5k USD)*, Funding to deliver a POC for *An Active Object Detection Platform* providing Computer Vision as a Service., 2020.

PoliMi **PhD Fellowship**, *Recipient for 3 consecutive years.*, 2014-2016.

PoliMi **Teaching Assistant Awards**, *Recipient for 5 courses.*, 2014-2016.

Teaching Experience

B.Sc, NE **Misure e Strumentazione Industriale**, *(TA Spring'14, TA Spring'16)*.
Industrial and Information Engineering School, Politecnico di Milano, Bovisa, Italy

B.Sc, ME **Misure Meccaniche e Termiche**, *(TA Spring'15, TA Spring'16)*.
Industrial and Information Engineering School, Politecnico di Milano, Piacenza, Italy

M.Sc, ME **Measurements**, *(TA Spring'15)*.
Industrial and Information Engineering School, Politecnico di Milano, Piacenza, Italy

Certifications

Nature **Scientific Writing and Publishing**, *Nature Masterclasses*, 11/2019.

Udacity **Deep Learning Nano Degree**, *Udacity*, 09/2017.

Stanford **Stanford University Machine Learning**, *Stanford University*, 06/2017.

PoliMi **Managing Essentials for PhDs**, *Politecnico di Milano Graduate School of Business*, Milano, Italy, 04-09/11/2016.

PoliMi **Presenting for Impact & Persuasive Writing**, *Trend 2000 Ltb*, Milano, Italy, 05-07/09/2016.

GMEE **Seminario di Eccelenza "Italo Gorini" 2014**, *Italian Association "Gruppo di Misure Elettriche ed Elettroniche"*, Lecce, Italy, 01-05/09/2014.

TOEIC **Test Of English for International Communication**, *900/990*.

Reviewer/Program Committee

IEEE/CVF **Top tiers CV conferences**, *(CVPR, ICCV, ECCV, BMVC + workshops)*.

AI **Top tiers AI conferences**, *(NeurIPS, ICML, AAAI)*.

IEEE **Transactions**, *(TPAMI, TIM, TIP, TMM)*.

Elsevier **Journals on Computer Vision**, *(IVC, Neurocomputing, EAAI, RAS, FSI)*.

ACM/SIGAPP **Symposium On Applied Computing**, *(SAC)*.

Walloon (BE) **International Scientific Committee for Grants/Fundings**.

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Patent

2016 **System and method for three-dimensional image reconstruction using absolute orientation sensor**, *Silvio Giancola, Bernard Ghanem, Jens Schneider, Peter Wonka*, US Patent 20180018787A1.

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*, In: Springer Brief in Computer Science.

Chapters

2018 **Metrological Qualification of the Kinect V2^{TM} Time-of-Flight Camera**, *Silvio Giancola, Matteo Valenti, Remo Sala*, In: A Survey on 3D Cameras: Metrological Comparison of Time-of-Flight, Structured-Light and Active Stereoscopy Technologies.

2018 **Metrological Qualification of the Orbbec Astra S^{TM} Structured-Light Camera**, *Silvio Giancola, Matteo Valenti, Remo Sala*, In: A Survey on 3D Cameras: Metrological Comparison of Time-of-Flight, Structured-Light and Active Stereoscopy Technologies.

2018 **Metrological Qualification of the Intel D400^{TM} Active Stereoscopy Cameras**, *Silvio Giancola, Matteo Valenti, Remo Sala*, In: A Survey on 3D Cameras: Metrological Comparison of Time-of-Flight, Structured-Light and Active Stereoscopy Technologies.

Journals

2017 **A Moving 3D Laser Scanner for Automated Underbridge Inspection**, *Marco Tarabini, Hermes Giberti, Silvio Giancola, Matteo Sgrenzaroli, Remo Sala, and Federico Cheli*, In: Machines 5.4, p. 32.

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

2016 **A metrological characterization of the Kinect V2 time-of-flight camera**, *Andrea Corti*, Silvio Giancola*, Giacomo Mainetti, and Remo Sala*, In: Robotics and Autonomous Systems 75, pp. 584–594.

Conferences Proceedings

2020 **A Context-Aware Loss Function for Action Spotting in Soccer Videos**, *Anthony Cioppa*, Adrien Deliège*, Silvio Giancola*, Bernard Ghanem, Marc Van Droogenbroeck, Rikke Gade, Thomas B Moeslund*, In: Computer Vision and Pattern Recognition 2020 (CVPR 2020).

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2019 **Leveraging Shape Completion for 3D Siamese Tracking**, *Silvio Giancola*, Jesus Zarzar*, and Bernard Ghanem*, In: Computer Vision and Pattern Recognition 2019 (CVPR 2019).

2018 **TrackingNet: A Large-Scale Dataset and Benchmark for Object Tracking in the Wild**, *Matthias Müller*, Adel Bibi*, Silvio Giancola*, Salman Al-Subaihi, and Bernard Ghanem*, In: European Conference of Computer Vision 2018 (ECCV 2018).

2018 **SoccerNet: A Scalable Dataset for Action Spotting in Soccer Videos**, *Silvio Giancola, Mohieddine Amine, Tarek Dghaily, and Bernard Ghanem*, In: Computer Vision and Pattern Recognition Workshop 2018 (CVPRW 2018) on Computer Vision in Sports.

2018 **Integration of Absolute Orientation Measurements in the KinectFusion Reconstruction pipeline**, *Silvio Giancola, Jens Schneider, Peter Wonka, and Bernard Ghanem*, In: Computer Vision and Pattern Recognition Workshop 2018 (CVPRW 2018) on Visual Odometry and Computer Vision Applications Based on Location Clues.

2016 **Accuracy of the Microsoft Kinect System in the Identification of the Body Posture**, *Paolo Abbondanza, Silvio Giancola, Remo Sala, and Marco Tarabini*, In: International Conference on Wireless Mobile Communication and Healthcare. Springer, Cham.

2016 **Motion Capture: An Evaluation of Kinect V2 Body Tracking for Upper Limb Motion Analysis**, *Silvio Giancola, Andrea Corti, Franco Molteni, and Remo Sala*, In: International Conference on Wireless Mobile Communication and Healthcare. Springer, Cham.

2015 **A non-contact optical technique for vehicle tracking along bounded trajectories**, *Silvio Giancola, Hermes Giberti, Remo Sala, Marco Tarabini, Federico Cheli, and Marco Garozzo*, In: Journal of Physics: Conference Series. Vol. 658. 1. IOP Publishing, p. 012010.

2014 **A robot trajectory programming method using multi-camera systems**, *Silvio Giancola, Davide Chiarion, and Remo Sala , and Marco Garozzo*, In: Journal of Physics: Conference Series. Vol. 658. 1. IOP Publishing, p. 012010.

Pre-prints

2020 **SeedQuant: A Deep Learning-based Census Tool for Seed Germination of Parasitic Plants**, *Justine Braguy*, Merey Ramazanova*, Silvio Giancola*, Muhammad Jamil, Boubacar A. Kountche, Bernard Ghanem, Salim Al-Babili*, Plant Physiology.

2020 **LC-NAS: Latency Constrained Neural Architecture Search for Point Cloud Networks**, *Guohao Li, MengMeng Xu Silvio Giancola, Ali Thabet, Bernard Ghanem*.

2019 **PointRGCN: Graph Convolution Networks for 3D Vehicles Detection Refinement**, *Jesus Zarzar*, Silvio Giancola*, Bernard Ghanem*, In: arXiv preprint arXiv: 1911.12236 .

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2019 **Efficient Tracking Proposals using 2D-3D Siamese Networks on LIDAR**, *Jesus Zarzar*, Silvio Giancola*, Bernard Ghanem*, In: arXiv preprint arXiv: 1903.10168 .

2017 **A Solution for Crime Scene Reconstruction using Time-of-Flight Cameras**, *Silvio Giancola, Daniele Piron, Pasquale Poppa, Remo Sala*, In: arXiv preprint arXiv: 1708.02033 .

Theses

2017 **Metrological analysis of Time-of-Flight cameras performances for multipurpose 3D reconstruction**, *PhD Thesis*, Supervised by Prof. Alfredo Cigada and Prof. Remo Sala (Politecnico di Milano).

2012 **Programmation offline d'une cellule robotisée à l'aide de techniques innovantes**, *Master Thesis*, Supervised by Prof. Pierre Renaud (INSA-IRCAD), Eng. Paolo Conca (ABB Robotics), Prof. Remo Sala (Politecnico di Milano).

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