Curriculum Vitæ

Luca Cosmo

Personal data

Place and date of birth:	Montebelluna (TV), Italy, 01st October 1986
Nationality:	Italian
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Affiliation

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Research interests and personal informations

I received my PhD in Computer Science from Ca' Foscari University of Venice in February 2016. My research interests spread among different aspects of Computer Vision and Pattern Recognition. My first work was about three dimensional structure acquisition and contact-less measurement of objects using multiple cameras [C.1]. Various works followed on how to increase the accuracy and simplify the calibration procedure of camera networks exploiting non constrained camera models [C.6,C.10] and elliptical features [C.4,J.6]. I've also collaborated with the Computer Vision spin-off, DigitalViews, in some industrial projects concerning the in-line quality control of silkscreen printings and conditioned air pipes.

Recently, my attention moved toward the application of Computer Vision techniques to perform a fast and reliable camera-based tracking of active and passive devices. These techniques have been useful to develop new interaction paradigms in multimedia applications [J.1,J.2,J.3]. One of the main contribution of our work is to provide a cheap and reliable system able to exploit stereoscopic visualization to allow the mixing of real and virtual world in a seamless way [C.2,C.5]. These works naturally led to the development of some procedures useful to the evaluation of this kind of interfaces, both from a qualitative and quantitative point of view [C.3,C.7,C.8,B.1].
Within a collaboration between Ca' Foscari and a large Italian retail channel, I had the chance to work with some of the new portable display technologies (e.g. Vuzix M-100, Moverio BT-200). This has been an opportunity to study their suitability to provide the user with useful information during the completion of a specific task. Indeed, it is not trivial to build a comfortable user interface when superimposed information prominence, real world occlusion (display transparency) and spatial relation (stereoscopy) need to be taken into account [C.9].

I spent four months of the last year of my Phd as visiting student at TU Munich within the Shape Analysis group of Prof. Dr. Daniel Cremers. Here I worked on some advanced topics on Deformable Shape Matching [J.4, J.5].

During my PhD studies I've also been involved in several collateral activities, like teaching activities (see section Teaching) and science popularization events (see section Events, communication and science popularization).

Education/Research

February 2016 - now

PostDoc in Computer Science

Università Ca' Foscari Venezia

Supervisor: prof. Augusto Celentano

Topics: Pose estimation; Tangible user interfaces; Stereoscopic user interfaces;

Sept. 2012 - February 2016

PhD in Computer Science

Università Ca' Foscari Venezia

Supervisor: prof. Andrea Torsello

Topics: Camera calibration; Pose estimation; 3D reconstruction; Tangible user interfaces; Stereoscopic user interfaces; Non-rigid shape analysis.

Thesis: 3D Acquisition and Analysis with Applications in Interaction and Contactless Measurement

Oct. 2009 - Mar. 2012

Master's degree in Computer Science *(summa cum laude)*

Università Ca' Foscari Venezia

Supervisor: prof. Andrea Torsello

Thesis: "Corrispondenza densa tra forme attraverso embedding di superficie e correlazione sferica"

Oct. 2005 - Mar. 2009

Bachelor's degree in Computer Science

Università Ca' Foscari Venezia

Supervisor: prof. Agostino Cortesi

Thesis: ": Analisi formale e sviluppo 3D di giochi per una piattaforma di Game Programming volta all'orientamento universitario"

Sep. 2000 - Jun. 2005

High School diploma in Accounting and Bookkeeping

Istituto Tecnico Commerciale Riccati-Luzzati

Main subjects: Business Administration, Political Economy, Public and Private Law

Work experience

Jan. 2013 – Jul. 2013

Web Developer

Marcomini Antonio, DAIS, Ca' Foscari University of Venice

Business sector: Environmental sciences

Activities:

- ◇ Development and implementation of an expert system for the collection, analysis and classification of information on projects / programs, documents and instruments relating to the redevelopment of brownfields through the MCDA methodology. (*http://www.dais.unive.it/ timbre/EXPERTSYSTEM/*)
- ◇ Development and implementation of a PHP based Web Application for the assignment of priorities for action at a set of brownfields. (*http://www.dais.unive.it/ timbre/PrioritizationTool/*)

May 2012 – Sep. 2012, Oct. 2015 - Mar. 2016

Research and Development

DigitalViews s.r.l.

Business sector: Information Technology
Activities: Research and implementation of a contact-less system for the measurement and analysis of air conditioning pipes through computer vision techniques.

Jan. 2010 - Jul. 2011
System Engineer and Software Developer
Riedi Insurance Broker di Stefano Riedi C. s.a.s., Via Monfenera 28/A, 31100 Treviso (TV)
Business sector: Insurance Brokers
Activities:
- Development and implementation of a web application for claims management.
- Development and implementation of a web based application for the automatic management and archiving of faxes.
- Enterprise network management.

Game developing

- Member of the VSTeam since 2010, an indie game developer team.
- Developer of the Graphical Engine (XNA 3.0) and Networking architecture of the RTS Game "Galaxy Wars", in collaboration with AIV (Accademia Italiana Videogiochi). *http://www.galaxywarsthegame.com/*

Scientific awards

- Best first year student award of the Master's Degree Programme in Computer Science, DAIS, Università Ca' Foscari di Venezia (2011)
- Award for the best Phd research work presentation on the academic year 2012-2013, Università Ca' Foscari di Venezia (2013)

Grants and scholarships

- Phd studies funded by national grant (2012-2015)

Teaching

Lower-division undergraduate courses

- *Teaching assistant in Web languages: Javascript*, Università Ca' Foscari Venezia (2016)
- *Teaching assistant in Computer Vision*, Università Ca' Foscari Venezia (2014, 2016)
- *Teaching assistant in Analysis*, Università Ca' Foscari Venezia (2013,2014)
- *Teaching assistant in Basic compute skills*, Università Ca' Foscari Venezia (2012-2015)
- *Teaching assistant in Databases*, Università Ca' Foscari Venezia (2013)
- *Teaching assistant in Object Oriented Programming*, Università Ca' Foscari Venezia (2012)

Training courses

- *J2EE server faces and web services*, FTE course managed by Sive Formazione S.r.l. (2015)
- *Java Enterprise Edition Advanced*, FTE course managed by Sive Formazione S.r.l. (2014)

Events, communication and science popularization

Events and exhibitions

- VenetoNight 2014 (European Commission Funded Researchers' Night), Interactive technical demo, *"Virtual book: simultaneous 3D acquisition and rendering of text and animations over the white pages of a book."*, Università Ca' Foscari Venezia (2014)
- VenetoNight 2013 (European Commission Funded Researchers' Night), Interactive technical demo, *"Holographic Table: user position based stereoscopic projection of virtual scenes."*, Università Ca' Foscari Venezia (2013)
- VenetoNight 2012 (European Commission Funded Researchers' Night), Computer Vision and Artificial Intelligence demo, *"Vision-based non-photorealistic representation and automated hand drawing by a robotic arm"*, Università Ca' Foscari Venezia (2012)

Museum installations

- MOCKBA Underground - Pittura astratta dal 1960 (Russian abstract paintings from 1960), Two large multitouch tables that can be used to control the combination of painting in a virtual gallery projected on the surrounding walls, Spazi Espositivi Università Ca' Foscari Venezia (2012)
- Avanguardia Russa: esperienze di un mondo nuovo (Russian avant-garde paintings), An interactive projection setup controlled by a tangible interface augmented by annotated factsheets, Palazzo Leoni Montanari, Vicenza (2012)
- William Congdon a Venezia (1948-1960): Uno sguardo americano (Painting by William Cogndon depicting Venice), Three large multitouch tables representing the island of Venice in different historical periods and controlling interactive wall projections, Spazi Espositivi Università Ca' Foscari Venezia (2012)

Keynotes

- *A 5 Degrees of Freedom Multi-User Tracking Device*, Keynote speech at Third International Conference on Software and Emerging Technologies for Education, Culture, Entertainment, and Commerce (SETECEC 2014)
- *A Robust Tracking Device for View Dependent Stereoscopic Display*, Keynote speech at Fourth International Symposium on Communicability, Computer Graphics and Innovative Design for Interactive Systems (CCGIDIS 2014)

Visiting Positions

Dec. 2014 - April. 2015 ***Visiting Student*** (4 months, Prof. Dr. Daniel Cremers) Department of Computer Science, Technische Universität München (TUM), Munich, Germany

Publications

International journals

[J.6] Filippo Bergamasco, Andrea Albarelli, Luca Cosmo, Emanuele Rodolà, and Andrea Torsello, An Accurate and RobustArtificial Marker based on Cyclic Codes. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, (TPAMI 2016)
[IF: 5.781]

[J.5] Emanuele Rodolà, Luca Cosmo, Michael M. Bronstein, Andrea Torsello, and Daniel Cremers. Partial functional correspondences. *Computer Graphics Forum* (CGF 2016)
[IF: 1.642]

[J.4] Luca Cosmo, Emanuele Rodolà,Andrea Albarelli, Facundo Memoli, and Daniel Cremers. Consistent Partial Matching of Shape Collections via Sparse Modeling . *Computer Graphics Forum* (CGF 2016)
[IF: 1.642]

[J.3] Andrea Albarelli, Luca Cosmo, Filippo Bergamasco, Flavio Sartoretto. Phase-based spatio-temporal interpolation for accurate 3D localization in camera networks. *Pattern Recognition Letters*, Elsevier, 2015
[IF: 1.034; 5-Year IF: 1.724; GRIN: B]

[J.2] Andrea Albarelli, Luca Cosmo, Filippo Bergamasco, Flavio Sartoretto, Andrea Torsello. A 5 degrees of freedom multi-user pointing device for interactive whiteboards. *Pattern Analysis and Applications*, Elsevier, 2015
[IF: 0.742; GRIN: A]

[J.1] Andrea Albarelli, Filippo Bergamasco, Luca Cosmo, Augusto Celentano, Andrea Torsello Using Multiple Sensors for Reliable Markerless Identification through Supervised Learning. *Machine Vision and Applications*, Springer, 2013
[IF: 1.009; GRIN: B]

Chapters in books

[B.1] Andrea Albarelli, Luca Cosmo, Filippo Bergamasco. Practical Metrics for Error Assessment with Interactive Museum Installations *Handbook of Research on Interactive Information Quality in Expanding Social Network Communications*, (IGI Global), 2015

Refereed conference papers

[C.10] Filippo Bergamasco, Andrea Albarelli, Luca Cosmo, Andrea Torsello, Emanuele Rodolà, Daniel Cremers. Unconstrained Ray Model in Light-Field Cameras for 3D Shape Reconstruction. *International Conference on Computer Vision and Pattern Recognition*, (CVPR2015), 2015
[GRIN: A]

[C.9] Andrea Albarelli, Augusto Celentano, Luca Cosmo, Renato Marchi. On the Interplay between Data Overlay and Real-World Context using See-through Displays *11th biannual Conference of the Italian SIGCHI Chapter*, (CHItaly 2015), 2015

[C.8] Andrea Albarelli, Luca Cosmo, Filippo Bergamasco, Andrea Gasparetto. Objective and Subjective Metrics for 3D Display Perception Evaluation *4th International Conference on Pattern Recognition Applications and Methods*, (ICPRAM2015), 2015

[C.7] Andrea Albarelli, Augusto Celentano, Luca Cosmo. Evaluating stereo vision and user tracking in mixed reality tasks *IEEE 10th Symposium on 3D User Interfaces*, (3DUI2015), 2015

[C.6] Andrea Albarelli, Luca Cosmo, Filippo Bergamasco, Andrea Torsello. High-Coverage 3D Scanning through Online Structured Light Calibration. *International Conference on Pattern Recognition*, (ICPR2014), 2014
[AR: 30%; GRIN: A]

[C.5] Luca Cosmo, Andrea Albarelli, Filippo Bergamasco, Andrea Torsello. Design and Evaluation of a Viewer-Dependent Stereoscopic Display. *International Conference on Pattern Recognition*, (ICPR2014), 2014
[AR: 30%; GRIN: A]

[C.4] Filippo Bergamasco, Luca Cosmo, Andrea Albarelli, Andrea Torsello. Camera Calibration from Coplanar Circles. *International Conference on Pattern Recognition*, (ICPR2014), 2014
[AR: 30%; GRIN: A]

[C.3] Andrea Albarelli, Luca Cosmo, Augusto Celentano. Evaluating Accuracy of Perception in an Adaptive Stereo Vision Interface *International Working Conference on Advanced Visual Interfaces*, (AVI2014), 2014

[C.2] Luca Cosmo, Andrea Albarelli, Filippo Bergamasco. A Low Cost Tracking System for Position-Dependent 3D Visual Interaction *International Working Conference on Advanced Visual Interfaces*, (AVI2014), 2014

[C.1] Filippo Bergamasco, Luca Cosmo, Andrea Albarelli, Andrea Torsello. A Robust Multi-Camera 3D Ellipse Fitting for Contactless Measurements. *3DIMPVT 2012: The Second Joint 3DIM/3DPVT Conference 3D Imaging, Modeling, Processing, Visualization, Transmission*, (3DIMPVT2012), 2012
[AR: 18%; GRIN: A]

(Notices in Italian language required by law)

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Autorizzo il trattamento dei dati personali contenuti nel mio curriculum vitae in base art. 13 del D. Lgs. 196/2003

Data di oggi: 23 marzo 2016

Firma (Luca Cosmo)