

# Curriculum Vitae



## Personal information

Titles Dr.-Ing.  
Name **Ballan Luca**  
Address CNB G 103.2, Universitätstrasse 6, 8092 Zürich, Switzerland  
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Nationality Italian

## Current Position

Post Doctoral Researcher  
ETH Zürich

## Education

January 2006-March 2009

*Thesis*  
*Committee*

### **Ph.D., Computer Engineering**

University of Padova, Italy

#### **Acquiring Shape and Motion of Interactive People from Video Sequences**

Guido Maria Cortelazzo (advisor), Andrea Fusiello, Marc Pollefeys

October 1998-April 2005

*Thesis*  
*Marks Average*

### **Laurea (Master) degree in Computer Engineering, 110/110 cum laude**

University of Padova, Italy

Deformable Models applied to Passive 3D Shape Reconstruction

**29.1/30**

July 1998

*Thesis*

### **School-leaving certificate, 60/60 cum laude**

Real-time (software) rendering

## Academic Experience

April 2009-Present

*Projects*

### PostDoc

ETH Zurich

- 4DVideo: *4D spatio-temporal modeling of real events from video streams*
- Recording Studio: *3D Video and tele-immersive applications*
- BeingThere Centre: *Research on advanced telepresence systems*

April 2008-March 2009

*Supervisor*

### Visiting Ph.D. student

Computer Vision & Geometry Lab, ETH Zurich

Prof. Marc Pollefeys

January 2006-March 2008

*Projects*

### Ph.D. student

LTTM, University of Padova

- Markerless motion capture
- Motion recovery and 3D shape reconstruction of asteroids (*Rosetta mission*)

*Supervisor*

Prof. Guido Maria Cortelazzo

April 2005-December 2005

*Project*

### Research assistant

LTTM, University of Padova

- Vision algorithms for cultural heritage preservation and medical applications (*analysis of the evolution of edemas, bedsores and skin cancers*)

*Supervisor*

Prof. Guido Maria Cortelazzo

September 2003-January 2004

*Project*

### Semester thesis

Intelligent Robotics Laboratory, University of Padova

- Vision algorithms for RoboCup (*the international soccer competition for robots*)

*Supervisor*

Prof. Enrico Pagello

## Awards and Fellowships

2011

Best Reviewer Award at CVPR

2008

**Best Paper Award** at 3DPVT, Atlanta, USA

2008

GINI Fellowship for research abroad, Gini Foundation, Padova, Italy

2008

Fellowship for research abroad, University of Padova, Italy

2005

Fellowship for research on vision algorithms for cultural heritage, University of Padova, Italy

2005

**Cum Laude** distinction University of Padova, Italy

1998

**Cum Laude** distinction high school I.T.I.S., Italy

## Teaching Experience

Co-Teaching

*Fall 2011*

Advanced Topics in Computer Graphics and Vision, *ETH Zurich*

*Fall 2010*

Advanced Topics in Computer Graphics and Vision, *ETH Zurich*

Teaching Assistant

*Spring 2010*

Computational Photography & Video, *ETH Zurich*

*Fall 2009*

Advanced Topics in Computer Graphics and Vision, *ETH Zurich*

*Spring 2009*

Visual Computing, *ETH Zurich*

*Spring 2007*

Digital Image Processing, *UNIPD Padova*

*Fall 2006*

Signal Processing, *UNIPD Padova*

Master thesis co-advisor

Leonardo Calaan, Simone Federico Brazzale, Carlo Dal Mutto, Andrea Agnoletto, Marco Toninato, Maria Paschalina Moschovitis, Olga Diamanti, Sesh Kumar

Reviewer for International Conferences and Journals

Siggraph Asia 2011, IJCV, Computer Graphics Forum, CVPR12, ICCV11, CVPR11, ECCV10, CVPR10, CVPR09, ICCV09, 3DPVT06, IEEE Transactions on Geoscience and Remote Sensing, IEEE Transactions on Visualization and Computer Graphics

## Industry Experience

2006

### Director of Software Development

3DEverywhere S.r.l.<sup>1</sup>, Italy

#### Automatic tracking system for football match analysis

Directed a team of five developers in the analysis, design and implementation of “3DE Tracker”, an automatic tracking system for football match analysis (currently used in the Italian Premier League and in the UEFA Champions League).

2005

### Software Engineer

3DEverywhere S.r.l.<sup>1</sup>, Italy

#### Realtime photo-realistic reconstruction of log textures

Developed an application for realtime reconstruction of high resolution log textures integrated in the “SCREENLOG” system produced by MiCROTEC S.r.l.-GmbH<sup>2</sup>.

2004

### Software Engineer

Play Basket<sup>3</sup>, Italy

#### Web application

Designed and implemented, inside a team of other four developers, a public web application based on MySQL for managing the statistics of local basketball leagues.

## Personal Skills and Competences

Languages

English (*fluent*)  
Italian (*mother tongue*)  
German (*basic*)

GRE General Test 2005

Quantitative 800

## Programming skills

Languages

- C & C++ (Win32/Linux) (~ 17 years experience)
- OPENGL, GLSL and CUDA (~ 7 years experience)
- Realtime applications, multi-threading and processes synchronization
- *Other*: C#, Matlab, Assembly x86 (SSE2/SSE1/MMX), OpenMP, SQL, HTML, CSS, PHP, Java, JavaScript, Basic, VRML,  $\LaTeX$

Project Management

Microsoft Project

<sup>1</sup><http://www.3deverywhere.com/>

<sup>2</sup><http://www.microtec.eu/>

<sup>3</sup><http://www.playbasket.it/>

3D Graphics and Video Editing

3D Studio Max, MAXScript, ZBrush, Premiere, After Effect, Combustion

Hobbies

Windsurfing, Swimming, Snowboarding, Math, Physics and Philosophy

## Refereed Publications

Journal articles

**Unstructured Video-Based Rendering: Interactive Exploration of Casually Captured Videos**

**L. Ballan**, G. J. Brostow, J. Puwein and M. Pollefeys

ACM Transactions on Graphics (Proceedings of SIGGRAPH 2010), L.A., USA

Book chapters

**3D modeling of real objects for creating content by passive optical methods**

**L. Ballan**, N. Brusco and G. M. Cortelazzo

3D ONLINE MULTIMEDIA AND GAMES: Processing, Visualization and Transmission, I. Cheng, G.M. Cortelazzo, A. Basu and S.K. Tripathi, World Scientific Publishing, 2008

**3D Reconstruction and Video-Based Rendering of Casually Captured Videos**

A. Taneja, **L. Ballan**, J. Puwein, G. J. Brostow and M. Pollefeys

Video Processing and Computational Video, D. Cremers, M. A. Magnor, M. R. Oswald, L. Zelnik-Manor, Springer, 2011

Conference papers

**Image Based Detection of Geometric Changes in Urban Environments**

A. Taneja, **L. Ballan** and M. Pollefeys

ICCV 2011, Barcelona, Spain

**Modeling Dynamic Scenes Recorded with Freely Moving Cameras**

A. Taneja, **L. Ballan** and M. Pollefeys

ACCV 2010, Queenstown, New Zealand

**Marker-less motion capture of skinned models in a four camera set-up using optical flow and silhouettes**

**L. Ballan** and G.M. Cortelazzo

3DPVT 2008, Atlanta, USA (Best Paper Award)

**Multimodal 3D Shape Recovery from Texture, Silhouette and Shadow Information**

**L. Ballan** and G.M. Cortelazzo

3DPVT 2006, Chapel Hill, USA

**Efficient 3D Modeling Of Sculptures From Photographs**

**L. Ballan**, N. Brusco and G. M. Cortelazzo

The Foremost European Electronic Imaging Events in the Visual Arts, EVA, 2006, Florence, Italy

**3D Passive Shape Recovery from Texture and Silhouette Information**

**L. Ballan**, N. Brusco and G. M. Cortelazzo

European Conference on Visual Media Production, CVMP, November 2005, London, UK

**Passive reconstruction of high quality textured 3D models of works of art**

N. Brusco, **L. Ballan** and G. M. Cortelazzo

International Symposium on Virtual Reality, Archeology and Cultural Heritage, VAST, November 2005, Pisa, Italy

## Other Contributions

- Workshops **3D Passive Shape Recovery From Texture And Silhouette Information**  
**L. Ballan** and G. M. Cortelazzo  
VIPS 2006, Verona, Italy
- Videos **Markerless Motion Capture of Skinned Models**  
**L. Ballan**  
CVPR 2009 Video Proceedings, Miami, FL, USA
- Demos **Unstructured VBR**  
**L. Ballan**  
ECCV 2010, Hersonissos, Crete, Greece
- Technical reports **Acquiring Shape and Motion of Interactive People from Video Sequences**  
**L. Ballan**  
Ph.D.'s thesis, Department of Electrical & Computer Engineering, University of Padova, Italy, 2008
- Deformable Models applied to Passive 3D Shape Reconstruction**  
**L. Ballan**  
Master's thesis, Department of Electrical & Computer Engineering, University of Padova, Italy, 2005

## Invited Talks

- March 2010 **MPI Saarbrücken**  
*From markerless motion capture to unstructured video based rendering*  
Hosted by Prof. Christian Theobalt
- July 2007 **University of Verona**  
*Human Motion Capture Systems*  
Hosted by Prof. Andrea Fusiello

## Funding

- 2010 **Recording Studio for 4D Video and Tele-Immersive Applications**  
Granted by Swiss National Science Foundation: **300k CHF** for equipment  
Co-author with Prof. Marc Pollefeys
- 2011 **BeingThere Centre**  
Granted by ETH (CHIRP): **850k CHF** for post-docs and travel  
Co-author with Dr. Tiberiu Popa, Dr. Silke Konsorski-Lang, Prof. Marc Pollefeys and Prof. Markus Gross

## References

*PostDoc supervisor*

**Prof. Marc Pollefeys**

Full Professor  
Department of Computer Science  
ETH Zurich, Switzerland  
marc.pollefeys@inf.ethz.ch

*Ph.D. advisor*

**Prof. Guido Maria Cortelazzo**

Full Professor  
Department of Electrical & Computer Engineering  
University of Padova, Italy  
corte@dei.unipd.it

Zurich, 29/9/2011

Luca Ballan