

# CURRICULUM VITAE

## MICHELE ZANIN



### PERSONAL INFORMATION

Name **Michele ZANIN, PhD**  
Address **via alla Scala, 4 - Trento, Italy**  
Telephone **(+39) 0461 42 10 75**  
Email **miczanin@ieee.org**  
Nationality Italian  
Date of birth November 15, 1974

### WORK EXPERIENCE

- Dates (from-to)
  - Name and address of employer
  - Type of business or sector
  - Occupation or position held
  - Main activities and responsibilities
- July 1999 – to date**  
FBK-irst (former ITC-irst) – TeV Technologies of Vision team  
Fondazione Bruno Kessler - Ricerca scientifica e tecnologica  
via Sommarive, 18 - Povo(TN), Italy  
Research Center  
Researcher (Nov 2001 – Oct 2004, Jan 2008 – to date)  
Independant consultant (Oct – Dec 2000, Apr – Oct 2001, Nov 2004 – Dec 2007)  
PhD student (Nov 2001 – Mar 2006)  
Visiting Student (Jul 1999 – Mar 2001)
- Computer Vision expert at Neuroinformatics Laboratory (NILaB), investigating Diffusion Magnetic Resonance Imaging (DMRI) techniques and algorithms.
  - Main developer and one of the proposer of Visual Environment Monitoring, an explorative project about fusion of geographical information with visual data automatically extracted from public available photos and webcams.
  - Main developer of *OBLO* project: design, implementation, integration and testing of vision algorithms for glass quality inspection in an industrial environment (collaboration with external company Virmax).
  - *SCOCA Mobile* project: development and implementation of a vision-based traffic monitoring system installed on a mobile station.
  - *DIPLODOC* (DIstributed Processing of LOcal Data for On-line Car services) project: design, development and testing of computer vision techniques applied to Intelligent Transportation Systems and Intelligent Vehicles.
  - *TAS* (Traffic Analysis System) project: identification and automatic extraction of visual characteristics of road traffic that are related to dangerous situations.
  - *ViSo Crozi2* project: quality control of an architecture for video surveillance of a road gallery.
  - *VisMac2004*: Scientific Secretariat of national GIRPR school “*La Visione delle Macchine 2004*”, Nov 8-12, 2004, Trento
  - Thesis supervisor of Nicola Peroni (Nov 2003 – Mar 2004) and Mattia Broilo (Jul 2004 – Mar 2005).
  - *WebValley 2001-2002-2003*: lecture “*Compressione immagini e video*” (Image and video compression).
  - *SCOCA* project: counting, classifying and tracking vehicles at road intersections by computer vision techniques.
  - Main developer of *Viabilità* project: design, development and testing of a traffic queue detector and classifier.
  - Seminar: “*Tecniche di Visione Artificiale applicate al controllo del traffico: rilevamento di code e conteggio classificato di veicoli*”, Sala consiglio Scientifico ITC-irst, Povo (TN), Mar 22, 2001.

- Dates (from–to)
- Name and address of employer
- Type of business or sector
- Occupation or position held
- Main activities and responsibilities

#### July 2003 – October 2003

Center for Biological and Computational Learning (CBCL)  
Massachusetts Institute of Technology (MIT)  
Cambridge, Massachusetts USA  
Research Center  
Visiting Student

- Automatic understanding of images of street scenes, with special emphasis on the categorization of objects, such as vehicles, pedestrians, trees, etc., by using machine-learning techniques.
- Feature extraction and implementation of algorithms for automatic feature selection.
- Seminar: *Presentation of TeV activities and SCOCA project*, July 30, 2003, CBCL lab, MIT, Cambridge, MA USA

- Dates (from–to)
- Name and address of employer
- Type of business or sector
- Occupation or position held

#### September 1999 – October 2000

scuola2F  
P.zza T.A. Edison, 12 - Firenze, Italy  
Private School  
Computer Science Teacher

### EDUCATION AND TRAINING

- Dates (from–to)
- Name and type of organization providing education and training
  - Title of qualification awarded
- Principal subjects/occupational skills covered

2002 – 2006  
University of Trento, Italy  
International Graduate School in Information and Communication Technologies (ICT)

#### PhD (Philosophiae Doctor - Dottore di Ricerca)

Computer Vision – Intelligent Transportation Systems – Intelligent Vehicles  
Thesis title: *“Vision-based road recognition and obstacle detection for intelligent vehicles”*

- Dates (from–to)
- Name and type of organization providing education and training
  - Title of qualification awarded
- Principal subjects/occupational skills covered

1994 – 2000  
University of Bologna, Italy  
Engineering Faculty

#### Laurea degree in Computer Science Engineering, 100/100 e lode

Specialization in *Computer Science Systems and Applications*

Thesis title: *“Tecniche di visione artificiale applicate al controllo del traffico: rilevamento di code e conteggio classificato di veicoli”*

#### SUMMER SCHOOLS

- Dates (from–to)
- Name and type of organization providing education and training
  - Title of qualification awarded

June 9-13, 2003  
Technical University of Crete  
Chania, Greece  
5<sup>th</sup> Short Course on *Dynamic Traffic Flow Modelling and Control*

- Dates (from–to)
- Name and type of organization providing education and training
  - Title of qualification awarded

August 13-17, 2001  
Portland State University  
Portland, Oregon USA  
*Image and Video Compression: Fundamentals, Standards, and Applications*

- Dates (from–to)
- Name and type of organization providing education and training
- Title of qualification awarded

October 23-27, 2000  
University of Modena  
Gruppo Italiano Ricercatori in Pattern Recognition (GIRPR)  
Modena, Italy  
Scuola Nazionale IAPR-IC *La Visione delle Macchine 2000*

## PERSONAL SKILLS AND COMPETENCES

MOTHER TONGUE

OTHER LANGUAGES

TECHNICAL SKILLS AND COMPETENCES

**Italian**

**English** (Reading skills: Excellent – Writing skills: Good – Verbal skills: Good)

- Operating Systems: Linux, Windows
- Programming Languages: C/C++, Python, Java, Tcl/Tk, Prolog, Pascal
- Programming environment: GNU suite (gcc, autoconf, automake, etc.), CMake, Microsoft .NET
- Other: Matlab, GRASS GIS, CVS and subversion (both admin and user),  $\LaTeX$ , web development (XHTML, Javascript, CSS, Ajax, jQuery), emacs, Microsoft Office, OpenOffice

## ADDITIONAL INFORMATION

• Journals

• Conference Proceedings

• Technical Reports

### PUBLICATIONS

- S. Messelodi, C. M. Modena, M. Zanin, F. G. D. Natale, F. Granelli, E. Betterle, and A. Guarise, "Intelligent extended floating car data collection," *Expert Systems with Applications*, 2008
- S. Messelodi, C. M. Modena, and M. Zanin, "A Computer Vision System for the Detection and Classification of Vehicles at Urban Road Intersections," *Pattern Analysis and Applications Journal*, vol. 8, no. 1-2, pp. 17–31, Sept. 2005
- P. Chippendale, M. Zanin, and C. Andreatta, "Environmental content creation and visualization in the 'future internet'," in *Future Internet Symposium 2008*, Vienna, Austria, Sept., 28-30 2008
- P. Chippendale, M. Zanin, and C. Andreatta, "Spatial and temporal attractiveness analysis through geo-referenced photo alignment," in *IEEE International Geoscience & Remote Sensing Symposium - IGARSS 2008*, Boston, Massachusetts, USA, July, 6- 11 2008
- P. Chippendale and M. Zanin, "Automatic spatio-temporal registration of Alpine photos using DTMs and image processing techniques," in *6th ARIDA Workshop on Innovations in 3D Measurement, Modeling and Visualization*, Povo, Trento, Italy, Feb., 25-26 2008
- M. Zanin, "Localization of ahead vehicles with on-board stereo cameras," in *14th International Conference on Image Analysis and Processing - ICIAP2007*, Modena, Italy, Sept. 11-13 2007, pp. 111–116
- M. Zanin and C. Corridori, "Vision-based estimation of road parameters for intelligent vehicles," in *Conferenza Italiana Sistemi Intelligenti CISI '06*, Ancona, Italy, Sept. 27-29 2006
- P. Lombardi, M. Zanin, and S. Messelodi, "Switching Models for Vision-based On-Board Road Detection," in *8th International IEEE Conference on Intelligent Transportation Systems ITSC'05*, Vienna, Austria, Sept.13-16 2005, pp. 67–72
- S. Messelodi, C. M. Modena, N. Segata, and M. Zanin, "A Kalman filter based background updating algorithm robust to sharp illumination changes," in *13th International Conference on Image Analysis and Processing - ICIAP2005*, Cagliari, Italy, Sept.6-8 2005, pp. 163–170
- P. Lombardi, M. Zanin, and S. Messelodi, "Unified Stereovision for Ground, Road, and Obstacle Detection," in *2005 IEEE Intelligent Vehicles Symposium Proceedings*, Las Vegas NV, USA, Jun. 6-8 2005, pp. 783–788
- C. Corridori and M. Zanin, "High Curvature Two-Clothoid Road Model Estimation," in *Proceedings of IEEE Conference on Intelligent Transportation Systems (ITSC 2004)*, Washington DC, USA, Oct. 3-6 2004, pp. 630–635
- C. Corridori, D. Giordani, P. Lombardi, S. Messelodi, C. M. Modena, and M. Zanin, "An in-vehicle vision system for dangerous situation detection," in *Conferenza Italiana sui Sistemi Intelligenti 2004 - 2° Convegno GIRPR-04*, Perugia, Italy, Sept.14-17 2004
- M. Zanin, S. Messelodi, and C. M. Modena, "An Efficient Vehicle Queue Detection System Based on Image Processing," in *Proceedings of ICIAP, 12<sup>th</sup> International Conference on Image Analysis and Processing*, Mantova, Italy, Sept.17-19 2003, pp. 232–237
- P. Chippendale, M. Zanin, and C. Andreatta, "Creating a social sensor network for monitoring the environment," *Fondazione Bruno Kessler, Tech. Rep. 200810011*, Oct. 2008

- Thesis
  - M. Zanin, "Vision-based road recognition and obstacle detection for intelligent vehicles," Ph.D. dissertation, International Doctorate School in Information and Communication Technologies, University of Trento, Italy, Mar. 2006
  - M. Zanin, "Tecniche di visione artificiale applicate al controllo del traffico: rilevamento di code e conteggio classificato di veicoli," Master's thesis, Università degli Studi di Bologna - Corso di Laurea in Ingegneria Informatica, Anno Accademico 1999-2000
- Laurea di I livello
  - Mattia Broilo, "Classificazione di ostacoli in sequenze di immagini riprese da bordo veicolo mediante Support Vector Machines," Master's thesis, Università degli Studi di Trento, Italy, Corso di Laurea in Ingegneria delle Telecomunicazioni, Anno Accademico 2003-2004, (in Italian)
  - Nicola Peroni, "Localizzazione della strada in immagini digitali riprese da bordo veicolo: algoritmi di segmentazione e sviluppo di un ambiente di valutazione," Master's thesis, Università degli Studi di Trento, Italy, Corso di Laurea in Ingegneria delle Telecomunicazioni, Anno Accademico 2002-2003, (in Italian)
- International
  - 1st Future Internet Symposium FIS2008, Sept. 28-30, 2008, Vienna, Austria
  - 11th International Conference on Medical Image Computing and Computer Assisted Intervention MICCAI 2008, Sept. 6-10, 2008, New York, USA
  - 14th International Conference on Image Analysis and Processing ICIAP 2007, Sept. 11-13, 2007, Modena, Italy
  - IEEE Conference on Intelligent Transportation Systems ITSC'05, Sept. 13-16, 2005, Vienna, Austria (served as co-chair for the *Imaging and Image Analysis 1* regular session)
  - IEEE Intelligent Vehicles Symposium IV'05, June 6-8, 2005, Las Vegas NV, USA
  - IEEE Conference on Intelligent Transportation Systems ITSC'04, Oct. 3-6, 2004, Washington DC, USA
  - IEEE Intelligent Vehicles Symposium IV'04, June 14-17, 2004, Parma, Italy
  - McGovern Retreat, Sep 10-11, 2003, Cape Cod, Massachusetts, USA
  - International Workshop on In-Vehicle Cognitive Computer Vision Systems, Apr. 3, 2003, Graz, Austria
  - IEEE Intelligent Vehicles Symposium IV'02, June 17-21, 2002, Versailles, France
  - The April Fools' Day workshop on Computational Humour TWLT 20, Apr. 15-16, 2002, Trento, Italy
- National
  - Tavola Rotonda 'Web 2.0, geoweb, GPS e dispositivi mobili per il turismo e l'outdoor' Outdoor-Days2008, May 24, 2008, Riva del Garda, Italy
  - Conferenza Italiana Sistemi Intelligenti CISI'06, Sept. 27-29, 2006, Ancona, Italy
  - Conferenza Italiana sui Sistemi Intelligenti 2004 - 2<sup>o</sup> Convegno GIRPR-04, Sept. 14-17, 2004, Perugia, Italy
  - 57<sup>a</sup> Conferenza del Traffico e della Circolazione, Oct. 15-20, 2001, Riva del Garda (TN), Italy
  - Mostra dell'architettura, dell'urbanistica, delle tecnologie e dei servizi per lo sviluppo del territorio - Progetto Città, Feb 19-21, 2001, Milano, Italy
  - AI\*IA Workshop on Artificial Intelligence, Constraint programming and Operation Research, Feb, 1999, Ferrara, Italy

#### FORMER STUDENTS

#### CONFERENCES ATTENDED

#### MEMBERSHIP OF PROFESSIONAL ORGANIZATIONS