

GIRPR Newsletter

Editore Carlo Sansone

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In questo numero

Editoriale

Il Convegno GIRPR 2010

Premio Migliore Tesi
di Dottorato 2010
Robust 3D Face Tracking

Report

International Computer Vision
Summer School 2010



Call for Papers
EG-IT 2010

7th International Workshop
«Data Analysis in Astronomy»
2011 Computational
Color Imaging Workshop



<http://www.girpr.org>

Gruppo Italiano Ricercatori in Pattern Recognition



Editoriale

tre mesi trascorsi dall'ultimo editoriale, nonostante la pausa estiva, sono stati densi di avvenimenti per la nostra comunità, dall'appuntamento biennale con **ICPR**, da poco conclusosi ad Istanbul, alla triste notizia, giunta a metà Agosto, della scomparsa di altro Past-President, **Piero Mussio**. Di questi recentissimi accadimenti parleremo tuttavia nel prossimo numero. In questo abbiamo invece dato ampio spazio ad un altro evento particolarmente significativo di questi ultimi tre mesi: il Convegno Nazionale di Ascea, che ha visto una nutrita partecipazione sia da parte dei membri del GIRPR, che della componente industriale interessata alle applicazioni del Pattern Recognition e della Computer Vision.

A pagina 2 trovate un report dettagliato di quanto avvenuto nei due giorni del Convegno, a firma di **Michele Nappi**.

Un degli eventi clou del Convegno è stato l'assegnazione del premio, intitolato alla memoria di **Vito di Gesù**, alla migliore tesi di Dottorato. Nell'articolo a firma di **Francesco Tortorella**, membro del *PhD Thesis Award Committee* per il 2010, viene riassunto, a pagina 4, il lavoro della Commissione, che ha portato alla nomina del vincitore, **Marco Anisetti**, autore della tesi dal titolo «*Robust 3D Face Tracking*». Il riassunto della tesi vincitrice, a firma dell'autore, è pubblicato a pagina 5.

Un altro evento sponsorizzato dal GIRPR si è tenuto nel mese di Luglio; a pagina 6 trovate quindi il report, a firma dei soci **Sebastiano Battiato** e **Giovanni Maria Farinella**, dell'edizione 2010 dell'*International Computer Vision Summer School*, un evento di grande respiro internazionale, che anche quest'anno ha visto una nutritissima partecipazione.

L'ultima sezione delle Newsletter, come ormai è prassi, è dedicata alle *Call for Papers*. In questo numero trovate, a pagina 8, la *Call for Papers* della conferenza **EG-IT 2010**, co-organizzata dai soci **Enrico Puppo** e **Leila De Floriani**; a pagina 9 quella del **7th International Workshop «Data Analysis in Astronomy»**, dedicato da quest'anno a

Livio Scarsi ed a **Vito Di Gesu'**; ed infine, a pagina 10, quella di un evento sponsorizzato dal GIRPR, il **2011 Computational Color Imaging Workshop** di cui è Co-Chair il socio **Raimondo Schettini**.

Chiudiamo questo editoriale con una buona notizia, che è anche una anticipazione dei riconoscimenti avuti dalla nostra comunità ad ICPR 2010, di cui tratteremo diffusamente nel prossimo numero: il socio **Francesco Camastra** ha infatti ricevuto il premio per il miglior paper pubblicato su Pattern Recognition nel 2008 come co-autore (con M. Filippone, F. Masulli e S. Rovetta) del lavoro «*A survey of kernel and spectral methods for clustering*», Pattern Recognition **41** (1), pp. 176-190, 2008.

Carlo Sansone

Il Convegno GIRPR 2010

La V edizione del Convegno Biennale GIRPR, organizzato dal Dipartimento di Matematica e Informatica dell'Università degli Studi di Salerno, si è tenuta ad Ascea Marina (Salerno) il 10 e 11 Giugno 2010. Sede del Convegno è stato l'antico Palazzo Alario sede della Fondazione Alario per Elea–Velia e come tradizione i lavori sono stati articolati in due densissime giornate.

Nella prima giornata l'evento è stato, come di consueto, il momento di incontro e confronto dei vari gruppi italiani che lavorano nell'ambito del pattern recognition. L'edizione 2010 ha visto infatti la partecipazione di ben 76 soci GIRPR di cui 26 relatori in rappresentanza di altrettante unità operative con una capillare e ben distribuita rappresentanza tra Nord, Centro e Sud/Isole.

Nella Sessione Plenaria ogni relatore ha avuto modo, attraverso la sintetica presentazione orale, di illustrare i principali risultati del biennio 2008-2010 e di anticipare quelle che saranno le sfide per il prossimo biennio.

Dai lavori del Convegno è emerso che tutte le tematiche classiche del Pattern Recognition sono al centro degli interessi

dei soci GIRPR; in particolare gli aspetti di Biometria e Video Sorveglianza sono al centro delle attività di ricerca di molte unità operative che operano in modo indipendente o attraverso reciproche collaborazioni.

Al termine della Sessione Plenaria è stato consegnato il Premio **Vito di Gesù** per la migliore tesi di dottorato al dott. **Marco Anisetti**.

Per aumentare la visibilità del GIRPR e per favorire una rete sempre più fitta di relazioni anche in prospettiva di bandi europei e nazionali, l'edizione 2010 si è arricchita di una sessione dedicata alle aziende nazionali e internazionali che operano nel settore del Pattern Recognition o su tematiche affini. La Sessione Industriale, organizzata da **Giovanni Garibotto**, ha visto la partecipazione di 14 aziende tra grandi, medie e piccole, ciascuna delle quali ha portato il proprio punto di vista privilegiato, la propria esperienza industriale nonché le problematiche attuali e future. Nell'ambito della tavola rotonda, che ha concluso i lavori della sessione industriale e della prima giornata di lavori, è emerso che molte delle attività che si svolgono nelle unità operative GIRPR, oltre ad essere in linea con le esigenze del mondo industriale, offrono soluzioni ad alcune delle problematiche emerse.



La seconda giornata è stata caratterizzata dalla Sessione Poster in cui le varie unità operative hanno presentato in modo più dettagliato e formale i risultati delle proprie ricerche.

Il lavori della due giorni di Ascea Marina si sono chiusi con la consueta assemblea dei soci GIRPR il cui clou è stato il rinnovo delle cariche istituzionale per il biennio 2010-2012.

Michele Nappi

Premio Migliore Tesi di Dottorato 2010

I 10 giugno scorso, durante il congresso GIRPR tenuto ad Ascea (SA), è stato premiato il vincitore della prima edizione del premio alla "Migliore Tesi di Dottorato", intitolato alla memoria dell'indimenticabile **Vito Di Gesù** (1945-2009). Potevano concorrere tutti i dottori di ricerca che avevano realizzato una tesi su tematiche di interesse del GIRPR (Pattern Recognitio, Computer Vision e applicazioni relative) e avevano discusso la tesi entro il 1 dicembre dello scorso anno.

a commissione nominata dal Governing Board del GIRPR era costituita da tre soci GIRPR (**Marco Ferretti**, Università di Pavia; **Nicu Sebe**, Università di Trento; **Francesco Tortorella**, Università di Cassino) e da tre ricercatori esteri: **Nello Cristianini** (University of Bristol), **Norman Poh** (University of Surrey) e **Sebastien Marcel** (Idiap, Martigny, CH).

Hanno partecipato alla tenzone ben 27 concorrenti con una distribuzione temporale delle tesi tra il 2005 (1) ed il 2009 (10) ed una varietà piuttosto ricca di argomenti. In una prima fase di valutazione i sei commissari hanno selezionato 11 tesi da passare alla valutazione successiva, in cui ogni membro ha esaminato personalmente due lavori. A questa seconda valutazione sono sopravvissute solo cinque tesi che sono arrivate al rush finale. Al termine di una serie di confronti incrociati, la Commissione ha eletto unanimemente come

vincitore il dott. **Marco Anisetti** con la tesi «*Robust 3D Face Tracking*», supervisore il prof. Ernesto Damiani dell'Università degli Studi di Milano.

I meritato premio, consistente in un assegno da 1000 euro ed un biennio di iscrizione gratuita al GIRPR, è stato consegnato nelle mani del vincitore dalla presidente del GIRPR **Gabriella Sanniti di Baja**.

Francesco Tortorella





Robust 3D Face Tracking

Video streams or images containing faces are essential to achieve intelligent, vision-based Human Machine Interaction (HMI). Specifically, being able to detect and track facial motion is of paramount importance in applications such as face-based people identification, expression analysis, surveillance and safety. In such a scenario, robustness to the real environment is repeatedly identified as one of the main issue that needs to be addressed. This thesis is concerned with the definition of a fully automatic 3D face tracking system robust to expression, illumination and occlusion. A fully automatic 3D face tracking system is typically constituted by three parts: i) face detection, ii) 3D model initialization (mask fitting), and iii) 3D deformable tracking. This thesis covers all of these three main aspects but concentrating the main contributions on the last two.

The thesis provides a state of the art, automatic vision system focused on facial tracking.

Our major technique contributions are:

i) Inclusion of morphing in the warping function of a constraint gradient-descent based template 3D tracking. This impact on the actual literature, providing a profitable way of managing every type of deformation that can be expressed as a linear combination of an ad hoc defined basis of deformation. Furthermore the obtained parameters have a direct link with a codified facial movement (Facial Action Coding System FACS). Other interesting aspect regards the definition of a constraint function so that the deformable face model consistency is guaranteed.

ii) Extension of the Linear Appearance Variation (LAV) technique for 3D models, in order to compensate for illumination effects, and to reconstruct the texture while initializing the model. In this contribution we extend the use of LAV including subject independent basis for illumination that does not require any training and depend only on 3D mesh and actual posture.

iii) A Template Management, aimed at making face tracking suitable for a wider range of real applications. Including occlusion management, and robustness to noise, and other external factors. This contribution impacts positively on the

real environment application. We develop an innovative template registration process that prevents drift effects without any previous learning or knowledge about the environment. Our strategy results in more stable tracking than the others proposed in the literature. We also introduce a new measure of quality of tracking called dissimilarity. This measure is at the base of any decision taken by our template registration approach. Furthermore the Template management includes different literature based techniques for dealing with noise that are perfectly adapted to our tracking strategy and permits to obtain an accurate object occlusion management and noise robustness.

iv) Fully automatic tracking initialization via face detect and 3D facial fitting adaptation including 3D shape adaptation while tracking. Our innovative approach for initial mask fitting permits to deal with the uncertainty of the initialized point detection thanks to a 3D deformable refinement. The proposed approach permits to achieve comparable or even better results in terms of precision with recent literature works that use an automatic initialization without any external intervention or ambient knowledge. Furthermore differently than the recent literature our contribution provides a full knowledge of subject posture, expression and rough information on illumination direction.

For all of the presented contributions we provide both theoretic and experimental results in the thesis.

Experimental results obtained on Cohn-Kanade, BiOLD, MMI, MEED, Hammal-Caplier, Boston University, and our own databases show that our technique is highly accurate and robust with respect to illumination variations, expression changes and both self and external occlusions. The tracking precision of our system compares favorably with a commercial multicamera system (ELITE 2002) using infrared reflecting markers, with the magnetic tracker «*The Flock of Birds*», and with current literature in the field.

Marco Anisetti
Premio Migliore Tesi di Dottorato 2010

International Computer Vision Summer School 2010



ICVSS 2010

International Computer Vision Summer School

The historic island of Sicily and its beautiful sunshine played host to over 150 young researchers, selected from 300 applicants, last week for the International Computer Vision Summer School 2010.

The school directors, Prof. **Sebastiano Battiato** and Dr. **Giovanni Maria Farinella** of the University of Catania, and Prof. **Roberto Cipolla** of the University of Cambridge, choose *Registration and Video Analysis* as the topics for the fourth successive year of the highly popular series of lectures and tutorials. This follows the previous topics of machine learning, detection, recognition and reconstruction.

In addition to attracting students from over 40 countries, the school played host to some of the top academics and researchers in the field:

- **Alberto Broggi**, University of Parma, IT
- **Tim Cootes**, University of Manchester, UK
- **Paul Debevec**, University of Southern California, USA
- **Mark Everingham**, University of Leeds, UK
- **Brendan J. Frey**, University of Toronto, CA
- **Pascal Fua**, Ecole Polytechnique Fédérale de Lausanne, CH
- **Kristen Grauman**, University of Texas at Austin, USA
- **Michal Irani**, The Weizmann Inst. of Science,

Israel

- **Julian Morris**, Oxford Metrics Group & 2d3 Ltd, UK
- **Patrick Pérez**, Technicolor Corporate Research, FR
- **Tomaso Poggio**, Massachusetts Institute of Technology, USA
- **Marc Pollefeys**, ETH, Zurich
- **Stefano Soatto**, UCLA, USA
- **Rick Szeliski**, Microsoft Research Ltd, Redmond, USA

In amongst a packed program of over 25 hours of presentations, the organisers found time for a tour of the ancient and picturesque town of Ragusa Ibla including the opportunity to experience the local traditions in the form of folk dancing and a delicious feast featuring many of the local seafood delicacies.

Intended to provide a review in the existing state-of-the-art research, one of the greatest attractions of the school is the opportunity for students at the start of their research careers to challenge and question both the professors and each other in an informal and relaxed setting, providing an inspirational atmosphere, a chance to improve research skills, through activities such as the reading group, posters session, and fostering a sense of community.



The scholarship to the best student (grant offered by **GIRPR**) was assigned to **Thomas Mensink**, INRIA Rhône Alpes, France. The best presentation prize (offered by Toshiba) was assigned to **Michael Bleyer**, Vienna University of Technology, Austria and **Minsu Cho**, Seoul National University, Korea.

As students prepared for the closing ceremony and an evening at the beach, many students express their desire to get back to the lab to test out new ideas and look forward to next year's school.

For more details visit:

<http://www.dmi.unict.it/icvss>

ICVSS Directors
Sebastiano Battiato
Giovanni Maria Farinella



Call for Papers: Eurographics Italian Chapter Conference 2010



Eurographics

EUROPEAN ASSOCIATION FOR COMPUTER GRAPHICS

Eurographics Italian Chapter Conference 2010 (EG-IT 2010)

November 18-19th, 2010 Genoa (Italy)

Location: Auditorium Palazzo Rosso

Computer graphics meets
computer vision

Call for papers

The Eurographics Italian Chapter Conference (EG-IT) is the main Italian conference on Computer Graphics. Organized by the EUROGRAPHICS Italian Chapter, the 8th EG-IT will be held in Genova on the 7th and 8th of October, 2010.

The scientific program of the conference will consist of both invited talks by distinguished speakers and contributions by participants. Contributed papers will be peer reviewed; accepted papers will be published in the proceedings of the conference by Eurographics and held on the EG digital library.

The theme of 8th EG-IT will be "Computer graphics meets computer vision". Contributions will be accepted from all areas of Computer Graphics, Geometric Modeling, Computer Vision, Image Processing and Multimedia. Interdisciplinary contributions on topics at the frontier between Computer graphics and such other disciplines will be particularly welcome.

EG-IT 2010 Organising Committee

Enrico Puppo - Dept. of Computer and Information Sciences - University of Genova
Andrea Brogni - Dept. of Advanced Robotics - Italian Institute of Technology
Leila De Floriani - Dept. of Computer and Information Sciences - University of Genova

Full paper submission:
September 15, 2010
Notification of
acceptance: **October
13, 2010**
Final paper due:
October 20, 2010

Important Dates

Call for Papers: 7th International Workshop «Data Analysis in Astronomy»



7TH International Workshop Data Analysis in Astronomy «LIVIO SCARSI AND VITO DI GESÙ»

SCIENCE: IMAGe IN Action

ETTORE MAJORANA FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE

15 - 22 April 2011, Erice, Italy

ANNOUNCEMENT and CALL for PAPERS

The Workshop is addressed to researchers and Ph.D. students in **Physics, Biology, Mathematics** and **Computer Science**. It will be held at the "Ettore Majorana Foundation and Centre for Scientific Culture", Erice, Trapani, Italy.

The "Data Analysis in Astronomy" Workshop series started in 1984 aiming to provide an updated overview of advanced methods and related applications to Astronomy and Astrophysics; the workshops constitute the first in time forums where astrophysicists and computer scientists could discuss, debate and compare results and methods, theory and experiments. The series progressively enlarged its scope toward simulation and modelling, opening also, in the 2007's edition, to further major branches of Science as Biology, Bioinformatics, Climatology and Earth Physics; the success of that year gave also birth, thanks to Vito Di Gesù, to the International Consortium for Interdisciplinary Science, ICIS, which strongly contributes to the present edition.

Simulation, modelling and interdisciplinary-science together highlight the key role of system representations. Consistent with new emerging theories and technologies, the present edition will be devoted to the representation problem. It is admitted representations are necessary for humans to understanding phenomena and they may help elaborating theories. They are likely key features of the leaving, where programs of systems are transmitted. Images to represent system behaviours for their understanding prove representations as information supports. That in turns introduces the importance of noise, also latent in biological growth, and sends back to the compressing role of representations. Eventually, the technological burst of "informatics" images spreads them at every stage of any current scientific steps. So that a problem to solve in parallel with most other scientific studies turns out to be "how to master the huge amount of data generated by the least observation".

Director of the Workshop

Bertrand Zavidovique
I.E.F. Université Paris Sud
ORsay, France

Steering Committee

Dalia Chakrabarty
University of Warwick,
Coventry, UK.

Maria Concetta Maccarone
Ist. Astrofisica Spaziale e Fisica Cosmica/INAF,
Palermo, Italy.

Gustav Bernroider
University of Salzburg,
Austria.

Luciano Boi
Ec. des H^{tes} Et^{es} en Sciences Sociales
Paris, France.

Umberto Bottazzini,
Università degli Studi di Milano,
Italy.

Malay K. Kundu
Indian Statistical Institute,
Kolkata, India.

Sisir Roy,
Indian Statistical Institute,
Kolkata, India.

Hezy Yeshurun
Tel Aviv University,
Israel.

Local Secretariat

Giosuè Lo Bosco
DMI, University of Palermo, Italy.

The 2011's workshop, subtitled "SCIENCE: IMAGe IN Action", aims at studying and discussing instances of the representation problem in Physics and Biology, with emphasis on Astronomy, Cosmology, Earth environment and climate studies.

Speaking of imaging and abstraction, we will endeavour to stress links between the various topics considered in these areas. Unifying theories and trans-discipline tools should illustrate the character of universality of pertaining representations. On the other hand, the emergence of artificial agents, synthetic images, data miners and other computed facilities to help abstraction handling will be discussed both in its genuine aspects and through examples at various levels.

The program will be arranged in single sessions with invited and contributed talks. Main topics will be addressed, but not limited, to:

- inference mechanisms in modelling: from Bayes to self-assembly and perhaps more
- data merging: mastering uncertainty, imprecision and incompleteness
- perceptual models: scale invariance, quantum physics and geometry, etc.
- credible agents: reality, models and (computer) representation of complex systems
- multi scale analysis: rare phenomena, data mining and large data bases
- virtual and augmented reality to experiment: from computer graphics to virtual observation or computational biology

*On the behalf of Prof. A. Zichichi (President of the EMFCSC),
the "DAA - Data Analysis in Astronomy" Workshops are from now dedicated to
"Livio Scarsi and Vito Di Gesù" who were the enthusiastic inspirers of the series.*

The Steering Committee is in the process of inviting Key Note speakers and of soliciting speakers.

There is room left for 20 submitted papers on all topics that fit the scope of the workshop, whether they are theoretical or they deal with experiments and results. Papers, 3 to 8 pages drafts + illustrations if any, will be reviewed by committee members and expert guests.

Submission deadline:	January 15 th , 2011
Notification of acceptance:	February 15 th , 2011
Final version to be sent:	March 1 st <i>together with registration fees, to appear in the proceedings</i>
Conference:	April 15 th , 2011

Registration fees are 800€ (700€ for accompanying persons). They cover all accommodation for the duration of the workshop, one sample of the proceedings, registration to the conferences and to the gala dinner, and to the excursion day.

Contact with the workshop
E-mail: daa_erice11@unipa.it

Web: http://www.unipa.it/daa_erice11

Call for Papers: 2011 Computational Color Imaging Workshop

Preliminary Call for Papers

2011 Computational Color Imaging Workshop
<http://www.ivl.disco.unimib.it/CFPs.html>

Milano,
Italy, 20 21 April, 2011

The IAPR workshop series on Computation Color Imaging is a premier international forum for research in color image processing, color image quality assessment, color vision modeling, and color image reproduction.

The third Computational Color Imaging Workshop will be held in Milano, Italy, April 20-21, 2011, with the endorsement of GIRPR (approved) and IAPR (pending).

Submission procedure:

The workshop presents research that advances the state-of-the-art in these and related areas. Prospective authors should format and submit a PDF version of their manuscript according to the instructions which will be published at the end of September 2010 at the workshop website.

The scientific program of the conference will consist of both invited talks by distinguished speakers and contributions by participants. All submitted papers will be reviewed by at least two independent reviewers. Accepted papers will be included in the CCIW 2011 proceedings. Submission implies that at least one author per paper will register and present the paper at the workshop.

Planning this workshop, the organizers would like to focus on the methods and applications of digital color image processing and analysis. The workshop is intended for researchers and practitioners in the digital imaging, multimedia, visual communications, computer vision, and consumer electronic industry, who are interested in the fundamentals of color image processing and its emerging applications. Papers of current interest are invited to any of the areas listed below:

- Computational color vision models
- Perceptual color image processing
- Color data compression and encoding
- Color image/video indexing and retrieval
- Semantic analysis of color images
- Color image filtering and enhancement
- Digital color image content protection
- Color image/video quality assessment
- Color image/video reproduction
- Multi-spectral/color image analysis
- Spatiotemporal color interaction modelling
- Color from science to art
- Color-based facial image analysis
- Applications and future trends

Important dates:

- Paper submission deadline: December 1, 2010
- Notification: February 15, 2011
- Camera-ready papers: April 1, 2011
- Workshop: April 20-21, 2011

Workshop Organizers/Chairs:

Raimondo Schettini, University of Milano Bicocca, Milano, Italy schettini@disco.unimib.it

Shoji Tominaga, Chiba University, Chiba, Japan, shoji@faculty.chiba-u.jp

Alain Tremeau, Jean Monnet, Université Saint Etienne, France, Alain.Tremeau@univ-st-etienne.fr

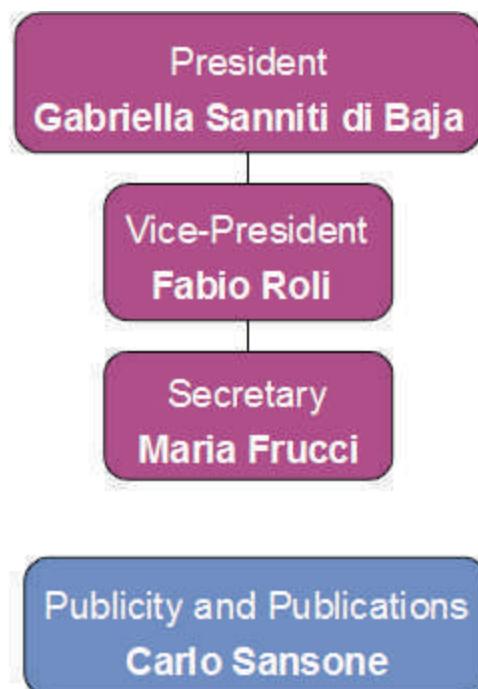
Workshop Program Committee (To be confirmed):

James Archibald (USA), Sebastiano Battiato (Italy), Simone Bianco (Italy), Cheng-Chin Chiang (Taiwan), Bibhas Chandra Dhara (India), Francesca Gasparini (Italy), Theo Gevers (NL), Yeong-Ho Ha (Korea), Patrick Lambert (France), Peihua Li (China), Hubert Konik (France), Lizhuang MA (China), Ludovic Macaire, (France), Yoshitsugu Manabe (Japan), Jussi Parkkinen (Finland), Ishwar K. Sethi (USA), Gerald Schaefer (UK), Bogdan Smolka (Poland), Sabine Susstrunk (Switzerland), Johji Tajima (Japan), Xiangyang Xue, (China)

Proceedings (TBD)

The proceedings of the previous editions of the Computation Color Imaging Workshop have been published by IEEE and Springer (LNCS).

Il Governing Board del GIRPR



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