

# Curriculum Vitae

## INFORMAZIONI PERSONALI

**Nome** ROBERTO  
**Cognome** PIRRONE  
**Recapiti** Dipartimento di Ingegneria Chimica, Gestionale, Informatica, Meccanica, Viale delle Scienze, 90128 Palermo - Ed. 6, III piano, stanza 8  
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## FORMAZIONE TITOLI

### ITALIANO

*dicembre 2004 – oggi:* Professore Associato per il SSD ING-INF/05, Dipartimento di Ingegneria Chimica Gestionale Informatica e Meccanica (DICGIM) Università degli Studi di Palermo

*marzo 1999 – dicembre 2004:* Ricercatore Universitario per il SSD K05A (poi ING-INF/05), Facoltà di Scienze della Formazione, Università degli Studi di Palermo

*1996-1998:* borsa post-dottorato, Università degli Studi di Palermo

*ottobre 1995:* Dottorato di Ricerca in Ingegneria Elettronica Informatica e delle Telecomunicazioni – curriculum informatico

*Titolo:* "Riconoscimento di forme tridimensionali da immagini"

*Advisor:* Prof. Salvatore Gaglio

abilitazione all'esercizio della professione di ingegnere con voti 120/120

*aprile 1991:* Laurea in Ingegneria Elettronica, 110/110 e lode

### ENGLISH

*Dec 2004 – present:* Associate Professor in Computer Engineering, Department of Chemical, Management, Computer, and Mechanical Engineering (DICGIM) University of Palermo

*Mar 1999 – Dec 2004:* Assistant Professor in Computer Engineering, Faculty of Education Sciences, University of Palermo

*1996-1998:* Postdoctoral Fellowship in Computer Engineering, University of Palermo

*Oct 1995:* Italian Research Doctor in Electronic, Computer, and Telecommunications Engineering - curriculum Computer Engineering

*Title: "Riconoscimento di forme 3D da immagini"*

*Advisor: Prof. Salvatore Gaglio*

*Jun 1991: Qualified to practice as engineer, 120/120*

*Apr 1991: Degree in Computer Engineering 110/110 cum laude*

## **ATTIVITA' DIDATTICA**

### **ITALIANO**

- Componente del Collegio dei Docenti del Dottorato in Ingegneria Chimica, Gestionale, Informatica e Meccanica dell'Università di Palermo, svolgendo compiti di supporto al Coordinatore.
- Componente del Consiglio di Coordinamento delle Lauree triennali e magistrali in Scienze della Comunicazione.
- Coordinatore Vicario del Consiglio di Coordinamento delle Lauree triennali e magistrali in Ingegneria Informatica.

### **ENGLISH**

- Member of the teaching staff of the Doctorate school in "Chemical, Management, Computer, and Mechanical Engineering" (curriculum in Computer Engineering) of the University of Palermo.
- Member of the teaching staff of the laurea degree course in Communication Science.
- Vice Head of the teaching staff of the laurea degree course in Computer Engineering.

## **RICERCHE FINANZIATE**

### **ITALIANO**

2014 - DIGITEMA – Fruizione DIGItale del patrimonio del TEatro MAssimo di Palermo, progetto PAC02L2-00215 a valere sull'Avviso D.D. MIUR n. 436 del 13 marzo 2013 - linea 2, Cultura ad Impatto Aumentato, durata 24 mesi, contributo UNIPA €460.000,00, Responsabile Scientifico del Progetto

Sviluppo di un'architettura hardware e software scalabile per la fruizione digitale integrata (portale web, app mobili, installazioni olografiche) del patrimonio culturale del Teatro Massimo di Palermo.

2013 - OMEGA LAB, PO FESR 2007-2013, obiettivo operativo 4.1.1, linea 4.1.1.1, prot. n. 1440, durata 30 mesi, contributo € 551.000,00 - unità operativa UNIPA

Sviluppo di una piattaforma hardware e software di base per lo scambio sicuro ed efficiente e per l'elaborazione di dati e conoscenza diagnostica in ambito sanitario sul territorio regionale e all'interno delle strutture associate, al fine di garantire l'interoperabilità tra sorgenti informative eterogenee.

2012 - I-TUTOR, Intelligent Tutoring for Lifelong Learning" Programma Europeo LLP, Azione "KA3-ICT Multilateral Projects", n. progetto 519058-LLP-1-2011-1-IT-KA3-KA3MP, durata 24 mesi, contributo € 71.553,00 - unità operativa UNIPA

Progettazione e realizzazione di un sistema di intelligent tutoring a supporto del lifelong learning, Capofila Università degli Studi di Macerata

## **ENGLISH**

2014 - DIGITEMA – Fruizione DIGItale del patrimonio del TEatro MAssimo di Palermo, Italian National Operative Programme, project code PAC02L2-00215, Principal Investigator, duration 24 months, UNIPA grant €460.000,00

Hardware/software scalable architecture for the integrated digital fruition of the cultural heritages belonging to the Teatro Massimo in Palermo.

2013 - OMEGA LAB, Operative Programme on the ERDF 2007-2013 for Sicily, objective 4.1.1, line 4.1.1.1, prot. 1440, coordination of the UNIPA research unit, grant € 551,000.00, duration 30 months

Hardware/software architecture for secure and efficient exchange of diagnostic information, and for diagnostic data elaboration to ensure interoperability between heterogeneous information sources.

2012 - I-TUTOR, Intelligent Tutoring for Lifelong Learning" LLP Action "KA3-ICT Multilateral Projects", project n. 519058-LLP-1-2011-1-IT-KA3-KA3MP, coordination of the UNIPA research unit, grant € 71,000.00, duration 24 months

Design and development of a new Moodle-based VLE aimed at supporting both the learning design, and the human tutor through intelligent data analysis, and innovative visualization techniques.

## **INCARICHI / CONSULENZE**

### **ITALIANO**

2013 - PON02-00563-3448479 "Rigenerazione di tessuti nervosi ed osteocartilaginei mediante innovativi approcci di Tissue Engineering - RINOVATIS", compenso € 70.000,00 oltre IVA, committente Engineering Ingegneria Informatica S.p.A. per lo sviluppo di software di estrazione e caratterizzazione automatica di microvescicole da immagini microscopiche di colture di tessuti nervosi

2008 - D3T – Digital Terrestrial Television Team, programma PIA Innovazione (B01/0291/P), compenso € 100.000,00 oltre IVA, commessa da parte del contraente Bassnet s.r.l. per lo sviluppo di una piattaforma di distribuzione di contenuti e-learning su box digitale terrestre interattivo.

2006 - POR Sicilia 2000-2006, Misura 3.14, "Progetto di innovazione tecnologica per la realizzazione di una piattaforma integrata di apprendimento collaborativo in rete", compenso € 25.000,00 oltre IVA, commessa da parte del contraente Castalia s.r.l. per lo sviluppo di funzionalità avanzate per l'organizzazione e la navigazione dei contenuti didattici.

### **ENGLISH**

2013 - Italian National Operating Programme PON02-00563-3448479 "Rigenerazione di tessuti nervosi ed osteocartilaginei mediante innovativi approcci di Tissue Engineering - RINOVATIS", main contractor Engineering Ingegneria Informatica S.p.A., development of software aimed at recognizing and characterizing "micro-vesicles" automatically, in microscope images of nervous tissue, grant € 70.000,00 plus VAT

2008 - Italian Industry Ministry, "D3T – Digital Terrestrial Television Team, programma PIA Innovazione (B01/0291/P)", main contractor Bassnet s.r.l., development of a framework to distribute learning objects via DTT, grant € 100,000.00 plus VAT

2006 - Regional grant "POR Sicilia 2000-2006 - Misura 3.14", main contractor Castalia s.r.l., development of enhanced browsing techniques for learning materials in an e-learning framework, grant € 25,000.00 plus VAT

## ASSOCIAZIONI SCIENTIFICHE

### *International Associations*

- AAAI
- IEEE
- ACM
- IAPR - Italian Chapter
- BICA (Biologically Inspired Cognitive Architectures)

### *Italian Associations*

- AI\*IA (Italian association for Artificial Intelligence)
- AICA (Italian Association for Automatic Computing)
- SIREN (Italian Society for Neural Networks)
- Sle-L (Italian Society for e-Learning)

## PUBBLICAZIONE

### *International journals:*

1. R. Gallea, E. Ardizzone, R. Pirrone, Physical Metaphor for Streaming Media Retargeting, *IEEE Transactions on Multimedia*, 16(4), 2014, 971-979, ISSN: 1520-9210, DOI: 10.1109/TMM.2014.2305917
2. A. Pipitone, V. Cannella, R. Pirrone, Automatic Concept Maps Generation in Support of Educational Processes, *Je-LKS Journal of e-Learning and Knowledge Society*, 10(1), 2014, 85-103, ISSN: 1826-6223.
3. E. Ardizzone, R. Pirrone, O. Gambino, S. Vitabile, Illumination Correction on Biomedical Images, *Computing and Informatics*, 33(1), 2014, 175-196, ISSN: 1335-9150.
4. V. Cannella, A. Chella, R. Pirrone, A meta-cognitive architecture for planning in uncertain environments, *Biologically Inspired Cognitive Architectures*, 5, 2013, 1-9, ISSN: 2212-683X, DOI: [10.1016/j.bica.2013.06.001](https://doi.org/10.1016/j.bica.2013.06.001).
5. R. Gallea, E. Ardizzone, R. Pirrone, O. Gambino, Three-Dimensional Fuzzy Kernel Regression Framework for Registration of Medical Volume Data, *Pattern Recognition*, 46(11), 2013, 3000-3016, ISSN: 0031-3203, DOI: [10.1016/j.patcog.2013.03.025](https://doi.org/10.1016/j.patcog.2013.03.025).
6. A. Gentile, R. Pirrone, G. Russo, Knowledge Discovery for the Linguistic Atlas of Sicily Project, *International Journal of Computer Systems Science & Engineering*, 25(2), 2010, ISSN: 0267-6192.
7. C.A. Bentivoglio, D. Bonura, V. Cannella, S. Carletti, A. Pipitone, R. Pirrone, P.G. Rossi, G. Russo, Intelligent agents supporting user interactions within self regulated learning processes, *Je-LKS Journal of e-Learning and Knowledge Society*, 6(2), 2010, 27-36, ISSN: 1826-6223.
8. E. Ardizzone, O. Gambino, A. Genco, R. Pirrone, S. Sorce, Pervasive Access to MRI Bias Artifact Suppression Service on a Grid, *IEEE Transactions on Information Technology in Biomedicine*, 13(1), (2009), 87-93, ISSN: 1089-7771, DOI: 10.1109/TITB.2008.2007108.
9. R. Pirrone, G. Russo, V. Cannella, D. Peri, GAIML: A new language for verbal and graphical interaction in chatbots, *Mobile Information Systems*, 4(3), (2008), 195-209, ISSN: 1574-017X.
10. E. Ardizzone, R. Pirrone, O. Gambino, Bias artifact suppression on MR volumes, *Computer Methods and Programs in Biomedicine*, 92(1), (2008), 35-53, ISSN: 0169-2607, DOI: 10.1016/j.cmpb.2008.06.005.
11. G. Pilato, R. Pirrone, R. Rizzo, A KST-Based System for Student Tutoring, *Applied Artificial Intelligence*, 22(4), (2008), 283-308, ISSN: 0883-9514, DOI: 10.1080/08839510801972785.
12. E. Ardizzone, R. Pirrone, O. Gambino, Illumination Correction on MR Images, *Journal of Clinical Monitoring and Computing*, 20(6), (2006), 391-398, ISSN: 1387-1307.
13. G. Peri, F. Cappello, F. Farina, F. Palma, F. Ridola, R. De Caro, D. Peri, V. Cannella, R. Pirrone, E. Ardizzone, Automatic induction of rules for computer-aided diagnosis in the multiple sclerosis by analysis of brain MR images, *Clinical Anatomy*, 17, (2004), 163-198, ISSN: 0897-3806.
14. E. Ardizzone, R. Pirrone, O. Gambino, Watershed based Detection of Multiple Sclerosis Lesions in MR Images, *WSEAS Transactions on Information Science and Applications*, 1(1), (2004), 252-256.
15. Peri, D., Pirrone, R., Ardizzone, E., Gaglio, S., Gerbino, A., Cappello, F., Farina, F., Marciàno, V., Palma, A., Peri, G., Three-dimensional geometrical models of the inguinal region. Towards a new stereology, *Italian Journal of Anatomy and Embryology*, 108(4), (2003), 223-230, ISSN: 1122-6714.
16. Peri, G., Cappello, F., Palma, A., Farina, F., Peri, D., Pirrone, R., Ardizzone, E., Gaglio, S., Development of software in the study of carotid artery in the neck, *Italian Journal of Anatomy and Embryology*, 106(4), (2001), 273-282, ISSN: 1122-6714.
17. R. Pirrone, Part based Segmentation and Modeling of Range Data by Moving Target, *Journal of Intelligent Systems*, 11(4), (2001), 217-247, ISSN: 0334-1860, DOI: 10.1515/JISYS.2001.11.4.217.

18. F. Alonge, E. Ardizzone, R. Pirrone, Neural Classification of Multiple Sclerosis Lesions in MR Images, *International Journal of Knowledge-Based Intelligent Engineering Systems*, 5(4), (2001), 228-233, ISSN: 1327-2314.
19. A. Chella, S. Gaglio, R. Pirrone, Conceptual representations of actions for autonomous robots, *Robotics and Autonomous Systems*, 34, (2001), 251-263, ISSN: 0921-8890, DOI: 10.1016/S0921-8890(00)00121-4.
20. A. Chella, D. Guarino, I. Infantino, R. Pirrone, A Vision System for Symbolic Interpretation of Dynamic Scenes, *Applied Artificial Intelligence*, 15(8), (2001), 723-734, DOI: 10.1080/088395101317018564.
21. E. Ardizzone, A. Chella, R. Pirrone, F. Sorbello, Recovering 3-D Form Features by a Connectionist Architecture, *Pattern Recognition Letters*, 15, (1994), 77-85, ISSN: 0167-8655, DOI: 10.1016/0167-8655(94)90103-1.

International conference proceedings

1. Gambino O., Lima F., Pirrone R., Ardizzone E., Campisi G., Di Fede, O., A Teledentistry System for the Second Opinion, *Proc. of 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society EMBC 2014*, Chicago, IL, USA, Aug. 26-30 2014, IEEE Computer Society Conference Publishing Services (CPS), 1378-1381, ISBN: 978-1-4799-4435-4, DOI: 10.1109/EMBC.2014.6943856.
2. Cannella V., Fedeli L., Pipitone A., Pirrone R., Rossi P.G., Fostering Teacher-Student Interaction and Learner Autonomy by the I-TUTOR Maps, *Proc. of 12th International Conference on Intelligent Tutoring Systems, ITS 2014*, Honolulu, HI, USA, Jun.5-9 2014, Springer-Verlag LNCS 8474, 634-637, ISBN:978-3-319-07220-3, DOI:10.1007/978-3-319-07221-088.
3. Gambino O., Lima F., Pirrone R., Ardizzone E., Campisi G., Di Fede O., Second Opinion System for Intraoral Lesions. *Proc. of 2014 IEEE 27th International Symposium on Computer-Based Medical Systems CBMS 2014*, New York, NY, USA, May 27-29 2014, IEEE Computer Society Conference Publishing Services (CPS), 495-496, ISBN: 978-1-4799-4435-4, DOI: 10.1109/CBMS.2014.107.
4. Gallea R., Ardizzone E., Pirrone R., Monte-Carlo Image Retargeting, in *Sebastiano Battiato and Jose Braz (eds.) VISAPP 2014 9th International Conference on Computer Vision Theory and Applications*, Lisbon, Portugal, Jan. 5-8, 2014, SciTePress, Vol. 1, 402-410, ISBN: 978-989-758-003-1, DOI: 10.5220/0004744404020408.
5. Gallea R., Ardizzone E., Pirrone R., Automatic aesthetic photo composition, *Proc. of 17th International Conference on Image Analysis and Processing, ICIAP 2013*, Naples, Italy, 9-13 Sep., 2013, Springer-Verlag LNCS 8157 Part 2, 21-30, ISBN: 978-364241183-0, DOI: 10.1007/978-3-642-41184-73.
6. A. Pipitone, M.C. Campisi, R. Pirrone, An A\* based semantic tokenizer for increasing the performance of semantic applications, *Proc. of 2013 IEEE 7th International Conference on Semantic Computing, ICSC 2013*, Irvine, CA, USA, Sep. 16-18, 2013, IEEE Computer Society, Los Alamitos, CA, USA, 393-394, ISBN: 978-076955119-7, DOI: 10.1109/ICSC.2013.75.
7. V. Cannella, R. Pirrone, A. Chella, Comprehensive Uncertainty Management in MDPs, in *A. Chella, R. Pirrone, R. Sorbello, K. Jóhannsdóttir (Eds.) Biologically Inspired Cognitive Architectures 2012 - Proc. of the 3rd Annual Meeting of the BICA Society*, Palermo, Italy, Oct. 31 - Nov. 3, 2012, Springer-Verlag AISC 196, 89-94, ISBN: 978-3-642-34273-8, DOI: 10.1007/978-3-642-34274-520.
8. A. Pipitone, R. Pirrone, Cognitive Linguistics as the Underlying Framework for Semantic Annotation, *Proc. of the 6th International Conference on Semantic Computing (ICSC 2012)*, Palermo, Italy, Sep. 19-21, 2012, IEEE Computer Society, Los Alamitos, CA, USA, 52-59, ISBN: 978-0-7695-4859-3, DOI: 10.1109/ICSC.2012.48.
9. G. Russo, F. Anastasio, A. Pipitone, A. Gentile, R. Pirrone, VEBO: Validation of E-R diagrams through ontologies and WordNet, *Proc. of the 6th International Conference on Semantic Computing (ICSC 2012)*, Palermo, Italy, Sep. 19-21, 2012, IEEE Computer Society, Los Alamitos, CA, USA, 342-344, ISBN: 978-0-7695-4859-3, DOI: 10.1109/ICSC.2012.41.
10. R. Gallea, R. Ardizzone, R. Pirrone, Physical simulation for real-time image/video retargeting, *Proc. of the Special Interest Group on Computer Graphics and Interactive Techniques Conference (SIGGRAPH 2012) - SIGGRAPH 2012 Posters*, Los Angeles, CA, USA, Aug. 05-09, 2012, ACM, ISBN: 978-1-4503-1435-0,
11. M. Guarnaccia, O. Gambino, R. Pirrone, E. Ardizzone, An Explorable Immersive Panorama, *Proc. of the 6th International Conference on Complex, Intelligent, and Software Intensive Systems (CISIS 2012)*, Palermo, Italy, Jul. 4-6, 2012, IEEE Computer Society, Los Alamitos, CA, USA, 130-134, ISBN: 978-0-7695-4687-2, DOI: 10.1109/CISIS.2012.15.
12. R. Gallea, E. Ardizzone, R. Pirrone, Springs-based Simulation for Image Retargeting, *Proc. of the 18th International Conference on Image Processing (ICIP 2011)*, Brussels, Belgium, Sep. 12 - 14, 2011, 1205-1208, ISBN 978-1-4577-1302-6, DOI: [10.1109/ICIP.2011.6115641](https://doi.org/10.1109/ICIP.2011.6115641).
13. O. Gambino, A. Caronia, V. Di Bella, R. Pirrone, S. Gaglio, A M3G Talking Head for Smartphones, *Proc. of International Conference on Complex, Intelligent and Software Intensive Systems (CISIS 2011)*, Seoul, Korea, Jun. 30 - Jul. 2, 2011, IEEE Computer Society, Los Alamitos, CA, USA, 595 - 599, ISBN: 978-1-61284-709-2, DOI: 10.1109/CISIS.2011.98.
14. D. Pirrone, G. Russo, A. Gentile, R. Pirrone, S. Gaglio, The ALSWEB Framework: A Web-based Framework for the Linguistic Atlas of Sicily Project, *Proc. of the 2011 IEEE International Conference on Advanced Information Networking and Applications (AINA 2011)*, Singapore, Mar. 22 - 25, 2011, IEEE Computer Society, Los Alamitos, CA, USA, 571 - 577, ISBN: 978-1-61284-313-1, DOI: 10.1109/AINA.2011.77.
15. V. Cannella, A. Pipitone, G. Russo, R. Pirrone, A Framework to Induce Self-Regulation Through a Metacognitive Tutor *Proc. of the AAAI 2010 Fall Symposium in Cognitive and Metacognitive Educational Systems (FS-10-01)*, Arlington VA, USA, Nov. 11-13, 2010, AAAI Press, Menlo Park, CA, USA, 17-21, ISBN: 978-1-57735-483-3.
16. R. Gallea, E. Ardizzone, R. Pirrone, Browser independent content based image resizing for liquid web layouts, *Proc. of ACM Workshop on Social, Adaptive and Personalized Multimedia Interaction and Access (SAPMIA) at ACM Multimedia 2010*, Florence, Italy, Oct. 25-29, 2010, ACM, USA 29 - 32, ISBN: 978-1-4503-0171-8.
17. R. Gallea, E. Ardizzone, R. Pirrone, O. Gambino, Medical Image Registration: interpolations, similarities and optimization strategies, *Proc. of the 23rd IEEE International Symposium on Computer-Based Medical Systems (CBMS 2010)*, Perth, Australia, Oct. 12-15, 2010, IEEE Computer Society, Los Alamitos, CA, USA, 72-77, ISBN 978-1-4244-9166-7.
18. R. Gallea, E. Ardizzone, R. Pirrone, Real-time content-aware image resizing using reduced linear model, *Proc. of the 17th International Conference on Image Processing (ICIP 2010)*, Hong Kong, Sept. 26-29, 2010, IEEE Computer Society, Los Alamitos, CA, USA, 2813-2816, ISBN 978-1-4244-7994-8.

19. V. Cannella, R. Pirrone, A combined semantic-syntactic sentence analysis for students assessment, *Proc. of 3rd Conference on Human System Interactions (HSI 2010)*, Rzeszow, Poland, 13-15 May 2010, IEEE Computer Society, Los Alamitos, CA, USA, 527-530, ISBN: 978-1-4244-7560-5, DOI: [10.1109/HSI.2010.5514519](https://doi.org/10.1109/HSI.2010.5514519).
20. R. Pirrone, A. Pipitone, G. Russo, Semantic sense extraction from Wikipedia pages, *Proc. of 3rd Conference on Human System Interactions (HSI 2010)*, Rzeszow, Poland, 13-15 May 2010, IEEE Computer Society, Los Alamitos, CA, USA, 543-547, ISBN: 978-1-4244-7560-5, DOI: 10.1109/HSI.2010.5514514.
21. O. Gambino, S. Vitabile, G. Lo Re, G. La Tona, S. Librizzi, R. Pirrone, E. Ardizzone, M. Midiri, Automatic Volumetric Liver Segmentation Using Texture Based Region Growing, *Proc. of International Conference on Complex, Intelligent and Software Intensive Systems (CISIS 2010)*, Krakow, Poland, Feb. 15-18, 2010, IEEE Computer Society, Los Alamitos, CA, USA, 146-152, ISBN: 978-1-4244-5917-9, DOI: [10.1109/CISIS.2010.118](https://doi.org/10.1109/CISIS.2010.118).
22. G. Russo, A. Gentile, R. Pirrone, A. Mollame, Information Organization and Visualization for the ALS Project, *Proc. of International Conference on Complex, Intelligent and Software Intensive Systems (CISIS 2010)*, Krakow, Poland, Feb. 15-18, 2010, IEEE Computer Society, Los Alamitos, CA, USA, 724-728, ISBN: 978-1-4244-5917-9, DOI: 10.1109/CISIS.2010.142.
23. A. Gentile, R. Pirrone, G. Russo, Knowledge Discovery and Digital Cartography for the ALS (Linguistic Atlas of Sicily) Project, *Roberto Serra, Rita Cucchiara (Eds.) AI\*IA 2009: Emergent Perspectives in Artificial Intelligence XIth International Conference of the Italian Association for Artificial Intelligence*, Reggio Emilia, Italy, December 9-12, 2009, Springer-Verlag LNCS 5883, 456-465, ISBN: 978-3-642-10290-5.
24. R. Pirrone, V. Cannella, O. Gambino, A. Pipitone, G. Russo, WikiArt: An Ontology-Based Information Retrieval System for Arts, *Proc. of Ninth International Conference on Intelligent Systems Design and Applications (ISDA 2009)*, Pisa, Italy, Nov. 30 - Dec. 2, 2009, IEEE Computer Society, Los Alamitos, CA, USA, 913-918, ISBN: 978-1-4244-4735-0.
25. E. Ardizzone, R. Gallea, O. Gambino, R. Pirrone, Multi-Modal Image Registration Using Fuzzy Kernel Regression, *Proc. of IEEE International Conference on Image Processing (ICIP 2009)*, Cairo, Egypt, Nov. 7-10, 2009, IEEE Computer Society, Los Alamitos, CA, USA, 193-196, ISBN: 978-1-4244-5654-3.
26. V. Cannella, R. Pirrone, Managing Conversation Uncertainty in TutorJ, *Proc. of the AAAI 2009 Fall Symposium in Cognitive and Metacognitive Educational Systems (FS-09-02)*, Arlington VA, USA, Nov. 5-7, 2009, AAAI Press, Menlo Park, CA, USA, 52-57, ISBN: 978-1-57735-436-9.
27. G. Russo, A. Pipitone, R. Pirrone, Acquisition Of New Knowledge In TutorJ, *Proc. of the AAAI 2009 Fall Symposium in Cognitive and Metacognitive Educational Systems (FS-09-02)*, Arlington VA, USA, Nov. 5-7, 2009, AAAI Press, Menlo Park, CA, USA, 81-86, ISBN: 978-1-57735-436-9.
28. E. Ardizzone, R. Pirrone, O. Gambino, F. Alagna, Segmentation of MR brain images with bias artifact, *Proc. of 9th International Conference on Information Technology and Applications in Biomedicine 2009 (ITAB 2009)*, Larnaca, Cyprus, Nov. 4-7, 2009, IEEE Computer Society, Los Alamitos, CA, USA, 1-4, ISBN: 978-1-4244-5379-5.
29. E. Ardizzone, R. Gallea, O. Gambino, R. Pirrone, Effective and Efficient Interpolation for Mutual Information based Multimodality Elastic Image Registration, *Proc. of IEEE 12th International Conference on Computer Vision Workshops, (ICCV 2009 Workshops)*, Kyoto, Japan, Sep. 27-Oct. 4, 2009, IEEE Computer Society, Los Alamitos, CA, USA, 376-381, ISBN: 978-1-4244-4441-0.
30. E. Ardizzone, R. Gallea, O. Gambino, R. Pirrone, Fuzzy Smoothed Composition of Local Mapping Transformations for Non-rigid Image Registration, *Pasquale Foggia, Carlo Sansone Mario Vento (Eds.) Image Analysis and Processing – ICIAP 2009 15th International Conference*, Vietri sul Mare, Italy, September 8-11, 2009, Springer-Verlag LNCS 5716, 777-786, ISBN: 978-3-642-04145-7.
31. E. Ardizzone, R. Gallea, O. Gambino, R. Pirrone, Fuzzy C-Means Inspired Free Form Deformation Technique for Registration, *R. Goebel, J. Siekmann, and W. Wahlster (eds.) Fuzzy Logic and Applications Proc. of 8th International Workshop WILF 2009*, Palermo, Italy, June 9-12, 2009, Springer-Verlag LNCS 5571, 148-154, ISBN: 978-3-642-02281-4.
32. R. Pirrone, V. Cannella, G. Russo, A Map-Based Visualization Tool To Support Tutors In E-Learning 2.0, *Proc. of 2nd International Conference on Human System Interaction 2009 (HSI 2009)*, Catania, May 21-23, 2009, IEEE Computer Society, Los Alamitos, CA, USA, 482-487, ISBN: 978-1-4244-3959-1.
33. E. Ardizzone, O. Gambino, R. Pirrone, Optic disc positioning and blood vessels extraction on eye fundus, *Proc. of IEEE EUROCON 2009*, St. Petersburg, May 18-23, 2009, IEEE Computer Society, Los Alamitos, CA, USA, 167-172, ISBN: 978-1-4244-3860-0.
34. V. Cannella, O. Gambino, R. Pirrone, S. Vitabile, GUI Usability in Medical Imaging, *Proc. of International Conference on Complex, Intelligent and Software Intensive Systems 2009 (CISIS 2009)*, Fukuoka, Japan, March 16-19, 2009, IEEE Computer Society, Los Alamitos, CA, USA, 778-782, ISBN: 978-1-4244-3569-2.
35. R. Pirrone, A. Gentile, V. Cannella, G. Russo, XML-based Knowledge Discovery for Linguistic Atlas of Sicily (ALS) Project, *Proc. of International Conference on Complex, Intelligent and Software Intensive Systems 2009 (CISIS 2009)*, Fukuoka, Japan, March 16-19, 2009, IEEE Computer Society, Los Alamitos, CA, USA, 98-104, ISBN: 978-1-4244-3569-2.
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## ATTIVITA' SCIENTIFICHE

### Events organization

- International Conference on Biologically Inspired Cognitive Architectures BICA 2012, Palermo, Italy, Oct. 31- Nov. 3 2012, Program Chair
- Chair of the 12th International Conference of the Italian Association for Artificial Intelligence AI\*IA 2011, Palermo, Italy, Sept. 15-17 2011
- Chair of the AAAI Fall Symposium 2010 MCES - Cognitive and Metacognitive Educational Systems, November 11-13 2010, Arlington VA, USA
- Chair of the AAAI Fall Symposium 2009 MCES - Cognitive and Metacognitive Educational Systems, November 5-7 2009, Arlington VA, USA
- Local organizing committee of the Italian National School for Computer Engineering Doctorate students, Palermo, September 17 - 28, 2007

- Organization of the IAPR-IC School for Doctorate students “La Visione delle Macchine 2006”, Palermo 28/08 - 01/09 2006
- Local organizing committee of the European Robotics Symposium - EUROS 2006

#### *Program committees member*

- ICSC 2013
- CISIS 2012, Track E-Learning and Groupware Systems
- ICSC 2012
- IIHCI 2010 at IEEE ARES/CISIS 2010
- Ec-Web 2010, Track RECOMMENDER SYSTEMS
- Ec-Web 2009, Track RECOMMENDER SYSTEMS
- IIHCI 2009 at IEEE ARES/CISIS 2009
- IIHCI 2008 at IEEE ARES/CISIS 2008
- KES 2008, Invited Session Engineered Applications of Semantic Web - SWEA
- IEEE ICADIWT 2008, WS Recommender Systems and Personalized Retrieval

#### *Editorial Boards:*

- Intelligenza Artificiale - The Int.I Journal of the AI\*IA, IOS Press, ISSN 1724-8035 (Associate Editor)
- Biologically Inspired Cognitive Architectures, Elsevier, ISSN 2212-683X

#### *Reviewer for international journals*

- Artificial Intelligence Journal, Elsevier
- Pattern Recognition, Elsevier
- Pattern Recognition Letters, Elsevier
- Learning And Individual Differences, Elsevier - IET Image Processing
- Int.I Journal of Robotics & Automation, ACTA Press

## **AMBITI DI RICERCA**

### **ITALIANO**

Il Prof. Roberto Pirrone ha iniziato la sua attività di ricerca nel campo della visione artificiale e in particolare del riconoscimento di forme 3D in scene reali con applicazioni nel campo della robotica. In questo campo si è occupato di ricostruire dati range in termini di primitive geometriche in forma analitica note come superquadriche nonché dell'implementazione efficiente su hardware parallelo e su GPU del Boundary Contour System (BCS) sviluppato da Steven Grossberg, con il quale sussiste ancora una proficua collaborazione. In questa attività il BCS viene utilizzato come estrattore di caratteristiche locali di contrasto dall'immagine per poter abilitare processi di visione più complessi, quale l'estrazione di mappe di disparità.

Parallelamente, ha svolto attività di ricerca nel campo dell'analisi e miglioramento di qualità di volumi di dati diagnostici provenienti da modalità quali TAC o RM al fine di individuazione di patologie e/o rimozione di artefatti inerenti le modalità di acquisizione dei dati stessi.

L'attività all'interno della Facoltà di Scienze della Formazione e del Coordinamento delle classi di Laurea in Scienze della Comunicazione ha orientato gli interessi di ricerca del Prof. Roberto Pirrone verso lo sviluppo di sistemi cognitivi artificiali a supporto dei processi pedagogici oltre che nel campo dell'interazione uomo-macchina: in quest'ambito ha cercato di conciliare anche gli interessi di ricerca precedenti. Sulle tematiche accennate sussistono intense collaborazioni con la Facoltà di Scienze della Formazione dell'Università di Macerata e con il gruppo del Prof. Roger Azevedo presso il Department of Educational and Counselling Psychology (ECP), Mc Gill University, Montreal, Canada.

Attualmente, i principali settori di ricerca del Prof. Pirrone sono i seguenti:

- Interazione uomo macchina con applicazione agli ambienti di apprendimento e all'IR su base semantica tecniche e architetture software per la visualizzazione di dati multidimensionali attraverso mappe. interfacce in linguaggio naturale basate sulla grammatica delle costruzioni per la comprensione di testi rispetto a ontologie di dominio nonché verbalizzazione di strutture OWL, con applicazione all'annotazione semantica.  
Algoritmi di planning dell'interazione dialogica uomo - agente artificiale attraverso modelli estesi di POMDP in grado di trattare contestualmente l'incertezza rappresentata come probabilità, possibilità e fuzzyness.  
interfacce utente auto-organizzanti sulla base del contenuto, con applicazione alle workstation PACS per analisi dei dati diagnostici da TAC/RM.
- Supporto alla diagnosi medica  
Architetture software per l'integrazione all'interno del flusso DICOM delle informazioni sull'interazione con i volumi di scansione TAC/RM.  
Algoritmi per la registrazione elastica di volumi di scansione TAC/RM e per la rimozione di artefatti da acquisizione, implementati su GPU.

## ENGLISH

Roberto Pirrone started his research activity in the field of computer vision. In particular he developed systems to recognize 3D shapes from real scenes; shapes were described as combinations of superquadrics. Moreover, he worked on efficient and parallel (GPU-based) implementation of the Boundary Contour System (BCS) by Steven Grossberg. Currently, a fruitful collaboration is still active with Professor Grossberg.

Along with computer vision, former research activity involved analysis and enhancement of volumetric data obtained from CT/MR scans. Such processing was oriented to both recognize pathologies and remove typical acquisition artifacts afflicting medical data.

After having started his didactic activity inside the Education Faculty, he turned his interest towards the development of cognitive architectures to support pedagogical processes, and HCI: he tried to conciliate part of his former research activity within the new one. Such new research gave rise to intense collaborations with the Education Faculty of the University of Macerata, and with the group led by Prof. Roger Azevedo at the Department of Educational and Counseling Psychology (ECP), Mc Gill University, Montreal, Canada. Current research interests are in:

- Human Computer Interaction applied to Virtual Learning Environments, and to semantic Information Retrieval  
Techniques and software architectures for map-based visualization of multidimensional data; application is in the field of virtual learning environments.  
Natural language interfaces relying on Construction Grammar aimed at understanding texts with respect to some domain ontology, and to allow production from OWL structures; application is in the field of semantic annotation.  
Planning the dialoging interaction between the human and the artificial agent by means of extended POMDP models that are able to manage seamlessly probabilities, possibilities, and fuzzyness as the representation of the uncertainty.  
Context dependent arrangement of GUIs applied to PACS workstations for analysis of CT/MR diagnostic data.
- Support to the diagnostic process  
Software architectures for embedding the information describing the interaction with CT/MR volumes in the DICOM stream  
Algorithms for elastic registration of CT/MR volumes, and for removing acquisition artifacts, and their implementation on GPU hardware.

## ALTRE ATTIVITA

**ITALIANO**

Delegato del Rettore per le Attività Informatiche

**ENGLISH**

Delegate of the Rector for the University Information Systems