

# Andrea Sanna's Resume

## Andrea Sanna

### Contacts

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email:

Tel:

### Education

1998 Ph.D. in Computer Engineering

1993 MS degree in Electronic Engineering

1987 High school diploma in Electronic

### Current Position

2010-present Associate professor with tenure at the Department of Control and Computer Engineering - Politecnico di Torino

### Professional Experiences

2000-2010 Researcher at the 2nd School of Engineering of the Politecnico di Torino - Vercelli

1998 Post-doc scholarship at the Politecnico di Torino

### Academies

Senior member of the ACM since June 2009.

### Some Figures

<b>Total number of citations to his/her own overall scientific production</b>	<b>The overall Hirsch index (H-index)</b>	<b>Database source</b>
Tot: 2867 in 207 documents indexed	28	GOOGLE SCHOLAR
Tot: 1373 in 121 documents indexed	21	SCOPUS
Tot: 777 in 98 documents indexed	15	WEB OF SCIENCE

Andrea Sanna is author and co-author of many scientific publications categorized as follows (numbers refer to the full list of publications):

- **79** International journal and magazines: 1, 2, 7, 9, 11, 12, 13, 15, 17, 18, 21, 25, 26, 33, 34, 35, 38, 41, 42, 45, 47, 49, 51, 52, 54, 55, 56, 58, 59, 60, 61, 63, 64, 66, 67, 68, 70, 75, 77, 79, 81, 82, 84, 87, 88, 92, 93, 94, 96, 98, 100, 103, 104, 105, 106, 110, 113, 114, 115, 116, 118, 120, 121, 125, 128, 130, 135, 143, 147, 148, 154, 159, 164, 169, 170, 172, 174, 177, 181, 184.
- **3** National journal and magazines: 124, 156, 166.
- **8** Book chapters: 8, 19, 22, 30, 32, 73, 107, 162.
- **3** Books: 161, 171, 180.
- **83** International conference proceedings: 3, 4, 5, 6, 10, 14, 16, 20, 23, 24, 27, 28, 29, 31, 36, 37, 39, 40, 43, 44, 46, 48, 50, 53, 57, 62, 65, 69, 71, 72, 74, 76, 78, 80, 85, 86, 89, 90, 91, 95, 97, 99, 101, 102, 108, 109, 111, 112, 119, 123, 126, 127, 132, 133, 136, 137, 138, 139, 140, 141, 142, 144, 145, 146, 150, 151, 152, 153, 155, 157, 160, 163, 165, 167, 168, 173, 175, 176, 178, 179, 182, 183, 185.
- **8** National conference proceedings: 83, 117, 122, 129, 131, 134, 149, 158.
- Several internal reports and teaching materials.

Table 1 lists all Andrea Sanna’s publications distributed per year from 1995 to present.

**Table 1 List of Andrea Sanna's publications per year**

Year	Journal/Magazine	Conference	Book chapter	Book
1995	1	2		
1996	1	1		
1997	1	2		1
1998	2	3		1
1999	3	2		
2000	1	2	1	1
2001	3	4		
2002	2	8		
2003	2	10		
2004	4	4		
2005	3	4		
2006	1			
2007	2			
2008	2	4	1	
2009	4			
2010	5	5		
2011	7	8		
2012	2	4	1	
2013	4	2		
2014	9	2		
2015	5	6		
2016	3	4		
2017	3	4	2	
2018	3	3	1	
2019	5	2	1	
2020	3	1	1	
2021	2	4		
TOT	83	91	8	3

## **Role in quality assurance and assessment processes**

Andrea Sanna has been deeply involved in quality assurance and assessment processes at different levels.

At a national level, Andrea Sanna is Referee for the Agency for the Evaluation of Universities and Research Institutes (ANVUR); in particular, for the Self-Assessment, Evaluation and Accreditation Periodic (AVA) system:

- Coordinator of the Commission N. 22 (PEV 11) for the Academic Year 2021-2022 (attivazione corsi)
- Coordinator of the Commission N. 11 (CEV 11) for the Academic Year 2017-2018 (attivazione corsi)
- Coordinator of the Commission N. 16 (CEV 16) for the Academic Year 2018-2019 (attivazione corsi)
- Member of the Commission N. 5 (CEV 5) for the Academic Year 2016-2017 (attivazione corsi)
- Member of the Commission N. 1 (CEV 1) for the Academic Year 2019-2020 (attivazione corsi)
- Member of the Commission for the visit to the University of Verona Year 2018-2019

At a University level, Andrea Sanna is currently Member of the “Quality Control Board” (Presidio della Qualità, 01/2019 – present) as a disciplinary expert for the ICT area.

Moreover, Andrea Sanna has been selected as mentor (in the framework of the Mentoring Polito Project) to support young researchers in teaching activities.

## Research interests

Andrea Sanna is author and co-author of more than 160 publications on journals, magazines, conference proceedings, book chapters and books (ORCID 0000-0001-7916-1699). The complete list of Andrea Sanna's publications is attached to the end of this document.

According to the 2012 ACM classification, the Andrea Sanna's research activity mainly refers to the Human-centered computing category. In details, the research activity mainly concerned the following topics:

- computer graphics;
- scientific visualization;
- virtual reality and augmented reality;
- image processing;
- parallel/distributed architectures;
- human-machine interfaces/interaction;
- education.

Computer graphics research has been mainly devoted to display 3D objects by means of different kinds of rendering algorithms on different categories of devices. The Ray Tracing algorithm has been deeply investigated and A. Sanna proposed innovative solutions for multiprocessor and distribute high performance architectures. On the other hand, the visualization of complex geometries on "thin" devices such as smart-phones, PDAs, tablet PCs by means of the remote visualization paradigm plays a key role for the research of A. Sanna. The Graphics User Interface design it also involved in this context; GUI re-using and graphics element detection/classification are the main topics of a deep investigation concerning the control of remotely running applications.

Scientific visualization mainly concerned the representation, by means of texture synthesis, of vector fields. In particular, novel methodologies, derived from the well-known LIC algorithm, were proposed in order to display a set of adjunctive scalar values to vector field representations. Procedural textures (for instance, bump mapping) are combined with traditional streamline computational techniques in order to present the user an enriched data representation. A part of Andrea Sanna's research was also related to the visualization of financial data (e.g., stock market); publications and a patent (as well as an international patent pending and several research contracts with an important trading online enterprise) were the main results of this activity.

Virtual and augmented reality research activities were mainly related both to support users in an industrial context and to simulate dangerous/critical environments. In particular, AR was used to provide efficient and effective interfaces to support technicians in maintenance and assembly tasks. Moreover, Andrea Sanna designed innovative multimodal AR interfaces in order to support hand-free tasks. Several of these research activities are related to European and Regional research projects (e.g., EASE-R3 and HuManS). A lot of effort is now devoted to integrate augmented reality in Industry 4.0 scenarios. On the other hand, the Andrea Sanna's research related to Virtual reality (VR) has been mainly devoted to investigate human locomotion in virtual environments.

From the point of view of distributed and parallel architectures, it is worthwhile to mention the research activity related to the design of peer-to-peer solution for searching, retrieving, and displaying complex data and metadata. Also solutions to bridge the gap between P2P and mobile devices have been proposed. On the other hand, grid approaches to support high performance rendering have been deeply investigated both at the application level (for instance implementing a distributed version of the ray tracing algorithm) and the network level (by proposing high performance implementation of message passing libraries such as Gamma). Cloud solutions have been also designed to provide a unified access platform to public bodies (in the context of the European project OASIS).

Andrea Sanna was involved in several research activities concerning image processing. For instance, he proposed a novel contrast enhancement algorithm (CMBFHE) that exploits efficient filtering techniques based on cascaded multistep binomial smoothing masks to achieve exactly the same results of other algorithms known in the literature, but with a highly reduced computational complexity. Moreover, A. Sanna presented a novel algorithm for ego-motion compensation of airborne carried FLIR cameras. Telemetry data received from the autopilot of the aircraft are used to predict the motion of the platform; in this way, it is possible to identify more accurately smaller regions where candidate targets have to be searched for. Experimental results show that the proposed solution can improve performance of automatic target tracking algorithms both in terms of accuracy/robustness and in terms of processing speed. More in general, Andrea Sanna was involved in several research activities related to the design and implementation of tracking algorithms with RGB, FLIR and depth cameras.

Human-machine interface research has been mainly devoted to use consumer electronics (such as mobile devices or sensors usually used for entertainment) to design and implement new interaction paradigms. These novel HMI solutions have been applied to control applications as well as mobile platforms such as robots and UAVs. In particular, a lot of work has been devoted in using depth sensors to detect hand and body poses also for directly animating virtual characters. This research activity is also strictly related to the design of efficient augmented reality interfaces; gesture and voice-based solutions have been investigated in order to improve the robustness of interfaces in industrial environments to interact with (collaborative) manipulators.

Andrea Sanna was also interested in Education-related topics. In particular, both technologies and design of curricula were investigated. Both of them concern computer graphics and computer animation topics that Andrea Sanna has been teaching since the academic year 1996/1997. From the technology point of view, automatic grading systems to evaluate exams of 3D modeling and computer animation have been investigated. Andrea Sanna proposed automatic solutions to measure the relevance degree of students' exams with respect to some reference examples to be replicated as similarly as possible. On the other hand, from the curricula design point of view, Andrea Sanna compared two different curricula of engineers and designers in order to point out drawbacks and strengths of both approaches.

## Teaching

Andrea Sanna has been involving in a large number of teaching activities of Bachelor, Master Science and Ph.D. degree since the academic year 1996/97; moreover, he has been involved in several postgraduate courses. A. Sanna taught both in Italian and in English for courses attended up to 319 students (1st year Informatica: fundamental of computer science). A. Sanna is currently the lecturer for: Informatica (1st year, 287 students, 8CFU), Modello Virtuale e Rendering (2nd year, 74 students, 6CFU), Computer animation (5th year, 97 students, 6CFU) and Human-machine Interaction (Ph.D, 22 students, 20h). A. Sanna has been also the lecturer for the following courses (see the complete list of Andrea Sanna's teaching activities):

- Operating systems (Sistemi operativi)
- Fundamental of computer graphics (Informatica grafica)
- Computer architecture (Calcolatori elettronici)
- Microprocessor systems (Sistemi a microprocessore)
- Computer networks (Reti di calcolatori)
- Virtual reality and computer animation (Realtà virtuale e computer animation)
- Ipermedia and web development (Ipermedia e sviluppo web)

Considering all teaching activities, A. Sanna has been the lecturer (professorship) for 113 courses, teaching assistant for 20 courses and tutor for 19 courses. The following table lists all teaching activities per year.

**Table 2 Andrea Sanna's teaching activities per year.**

Academic Year	Lecturer (professorship)	Teaching assistant	Tutor	Videolections	Master coordination	Student Challenge
1996/97		3	1			
1997/98	2	2	1			
1998/99		3	2			
1999/00		3	3			
2000/01		4	3	13 for Consorzio Nettuno		
2001/02	3	3	3			
2002/03	3	2	2			
2003/04	5 + 1(master)		2			
2004/05	6		1			
2005/06	7 + 2(master)		1			
2006/07	6 + 1(master)					
2007/08	7 + 2(master)					
2008/09	6					
2009/10	7					
2010/11	6					
2011/12	6					
2012/13	5					
2013/14	3					
2014/15	3					
2015/16	2					
2016/17	3					
2017/18	3 + 1(master)					
2018/19	3 + 1(Ph.D)					
2019/20	5 + 1(master)					
2020/2021	5 + 1(master)				1	
2021/22	5 + 1(Ph.D)+1(master)					1
	113	20	19	13	1	1

## Projects

Andrea Sanna has been involved in many regional, national and European projects both as Coordinator and as Member.

In particular, he has been the team leader/coordinator in the following projects:

- OASIS: Openly Accessible Services and Interacting Society (EU co-funded project under the Competitiveness and Innovation framework Programme CIP ICT PSP - N°297210). Project budget 3.810.214€, research unit budget 239.232€.
- Nuvola3D: technology for 3D cloud computing (a regional project). Project budget 625.652,50€, research unit budget 144.982,50€.
- EASE-R3: Integrated framework for a cost-effective and ease of Repair, Renovation and Re-use of machine tools within modern factory (EU co-funded project under the FoF.NMP.2013-8 Innovative strategies for renovation and repair in manufacturing - FP7). Project budget 6.146.989,10€, research unit budget 465.687,90€.
- HuManS: Human centered Manufacturing Systems (Sistemi di Produzione Innovativi). Regional project Bando: FESR 2014/2020 Piattaforma Tecnologica "Fabbrica Intelligente". Budget research unit 92.735,30€.
- "IVShopping: interfaccia per un negozio virtuale interattivo" project young researchers funded by Politecnico di Torino (2000) budget 11 milioni 448 mila lire.
- "Strumenti e tecniche per la realizzazione di negozi virtuali distribuiti", project co-funded by Consiglio Nazionale delle Ricerche (CNR) (2001-2002).
- "Sviluppo di un sistema di calcolo ad alte prestazioni mediante cluster di Personal Computer", project young researchers funded by Politecnico di Torino (1999) budget 10 milioni 744 mila lire. In this project, project coordination was shared with prof. Bartolomeo Montrucchio.
- "Progetto Miglioramento Qualità della Didattica 2016", project funded by Politecnico di Torino to improve the quality of teaching, 2016. Budget 15.000€.

He also participated to the following projects:

- National project COFIN 2001: "Elaborazione ad alte prestazioni per applicazioni con requisiti di elevata intensità computazionale e vincoli di tempo reale" (Prot. 2001097825)
- National project CNR: "Strumenti e tecniche per la realizzazione di negozi virtuali distribuiti" (Cod. CNRC00FE45)
- European project EGSO: "European Grid of Solar Observations" (IST-2001-32409).
- National project COFIN 2004: "Studio e sviluppo di un sistema per il controllo e il monitoraggio in tempo reale del territorio per la prevenzione degli incendi" (Prot. 2004095094).
- European project HELEN "The European LEarning Network" (Leonardo Da Vinci), 2004-2006.
- European project VICTORY: "Audio-Visual Content search and retrieval in a distributed P2P repository" (IST-6-044985-STREP).
- Regional project: "GAL-PMI – Anticipando Galileo: prodotti e servizi a supporto della mobilità e della sicurezza".
- European project LITES: "Intelligent Street Lighting for Energy Saving " (ICT PSP Project Pilot B n° 238916)
- Regional project PIPIOT: "Piattaforma Tecnologica Innovativa per L'Internet delle Cose".
- Project ENIAC- MOTORBRAIN "Nanoelectronics for Electric Vehicle Intelligent Failsafe Power Train" (JTI CALL3-2010).
- Smart3D: Filiera Produttiva Dispositivi Polimerici Smart 3D. Regional project Bando: FESR 2014/2020 Piattaforma Tecnologica "Fabbrica Intelligente".

## Editorial Boards and Program Committee

- 2017- present Associate Editor for the International Journal of Art, Culture and Design Technologies (IJACDT)
- 2005- present Journal of Systemics, Cybernetics and Informatics ISSN: 1690-4524
- 2007- present The Ergonomics Open Journal ISSN: 1875-9343
- 2007- 2018 The Open Cybernetics & Systemics Journal ISSN: 1874-110X
- 2009- present The International Journal of Mobile Human Computer Interaction (IJMHCI) ISSN: 1942-390X
- 2016- present The International Journal of Art, Culture and Design Technologies (IJACDT) ISSN: 2155-4196
- 2015- present Advances in Computational Design (ACD) journal ISSN: 2383-8477
- 2016- present International Journal of Mobile Device Engineering
- 2012 Guest Editor of the special issue on Remote Visualization. In: Computing and Visualization in Science, vol. 15:3, pp. 99-100.
- 2012 Guest Editor of the special issue on Advances in Target Tracking in Forward-Looking InfraRed (FLIR) Imagery, In Sensors, vol 14:11, pp. 2097-20303.
- 2014 Guest Editor of the special issue on Virtual Puppetry. In: ENTERTAINMENT COMPUTING, vol. 5:4, pp. 269-270
- 2015 General Chair of the 7th International Conference on Intelligent Technologies for Interactive Entertainment (INTETAIN 2015)
- Session Chair at Salento AVR 2016, June 15-18, Otranto (LE), Italy: chair for session 9 - Human-Computer Interaction
- 2016-present Encyclopedia of Computer Graphics and Games (Springer)
- 2017-present AIMS Electronic Engineering (AIMS Press)
- 2019-present Current Chinese Computer Science (CCCS)

## Some reviewing activities

- IEEE Transactions on Computer (2003).
- IEEE Transaction on Multimedia (2007).
- IEEE Transaction on Instrumentations and Measurements (2009, 2012, 2018 and 2019).
- IEEE Transaction on Visualization and Graphics (2012).
- IEEE Transaction on Industrial Informatics (2017).
- IEEE Transactions on Emerging Topics in Computing (2019).
- IEEE Access (2019, 2020)
- Computer in Industry, Elsevier (2018, 2019, 2020).
- Sensors MDPI (2013, 2015, 2018).
- Remote Sensing (2019)
- MDPI Information (2018, 2019).
- MDPI Symmetry (2020)
- International Journal on New Computer Architectures and Their Applications (2013)
- International Journal of Mobile Human Computer Interaction (2009, 2018, 2019, 2020).
- Computer Methods Programs Biomedicine, Elsevier (2007, 2019).
- International Journal of Human Computer Studies, Elsevier (2003).
- Courses proposals for the ACM Siggraph (2002, 2003 and 2004).
- International Conferences in Central Europe on Computer Graphics, Visualization and Computer Vision - WSCG (1998, 1999, 2000, 2002, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012,2013,2016,2017,2018).
- International Conference IEEE Visualization (2000).
- International Conference IEEE International Conference on Emerging Technologies and Factory Automation - ETFA (2005 - 2009).



- International Conference World Multi-conference on Systemics, Cybernetics and Informatics (2005 and 2006).
- International Conference Computing, Communications and Control Technologies (2004, 2005, 2008, 2009 and 2010).
- Salento AVR: International Conference on. Augmented Reality, Virtual Reality and Computer Graphics (2014,2015,2016,2017).
- International Conference on Computer-Human Interaction Research and Applications CHIRA (2017, 2018, 2019, 2020).
- International Conference on Computer-Human Interaction Theory and Applications HUCAPP (2017, 2018, 2019, 2020, 2021).

## Awards

- Andrea Sanna received the Italian National Scientific Qualifications awarded for Full Professor positions both in 2012 and 2019:
  - <https://abilitazione.cineca.it/ministero.php/public/esitoAbilitati/settore/09%252FH1/fascia/1>.
  - <https://asn18.cineca.it/pubblico/miur/esito-abilitato/09%252FH1/1/3>
- Best Paper: Paravati G; Sanna A; Lamberti F; Ciminiera L. An Adaptive Control System for Interactive Virtual Environment Content Delivery to Handheld Devices. In: 1st International Conference, UCMedia 2009, Venice (ITA), Dec. 9-11 2009. pp. 169-178
- Best Paper: Bazzano F.; Lamberti F.; Sanna A.; Paravati G.; Gaspardone M. Comparing Usability of User Interfaces for Robotic Telepresence. In 1st International Conference on Human Computer Interaction Theory and Applications, HUCAPP 2017, Porto, Feb. 27 - March 1 2017, pp. 1-8.
- Best Paper: Francesco De Pace, Federico Manuri, Andrea Sanna, and Davide Zappia An Augmented Interface to Display Industrial Robot Faults. In: 5th International Conference on Augmented Reality, Virtual Reality and Computer Graphics, SalentoAVR 2018, Otranto, June 24-27 2018.

Andrea Sanna has been **Research Fellow** at:

- IRITI (Istituto di Ricerca sull'Ingegneria delle Telecomunicazioni e dell'Informazione), an Institute of the Research National Country (CNR), from 01/01/2002 to 31/12/2002
- Politecnico di Torino by a Pre-post doc grant, academic year 1996/1997
- Politecnico di Torino by a post doc grant, academic year 1997/1998
- Politecnico di Torino by a post doc grant, academic year 1998/1999

## Supervision of Doctoral Student Projects

2008	Research activity project of the Ph.D. student Gianluca Paravati	The research activity of G. Paravati mainly concerned the design and the implementation of Quality of Experience managers for 3D object visualization applications and image processing techniques for the target tracking.
2014	Research activity project of the Ph.D. student Federico Manuri	The research activity of F. Manuri concerns information visualization and human-machine interfaces.
2017	Research activity project of the Ph.D. student Francesco De Pace	The research activity of F. De Pace concerns multimodal e natural human-machine interfaces for Industry 4.0.
2020	Research activity project of the Ph.D. student Damiano Oriti	The research activity of D. Oriti concerns a machine learning approach toward 3D classification and reconstruction to support augmented and virtual reality applications

## Roles in organization

Andrea Sanna has been deeply involved in institutional roles at different levels.

At a University level, Andrea Sanna held the following offices:

- Member of the “Quality Control Board” (Presidio della Qualità, 01/2019 – present) as a disciplinary expert for the ICT area.
- Member of the “Specializing Master's Programmes and Lifelong Learning School” (Consiglio della Scuola Master e Formazione Permanente) 07/2013- 07/2019.
- Member of the board for the entrance tests at the Politecnico di Torino 2002-03.

At a School level (2nd School of Engineering - Vercelli) Andrea Sanna held the following offices:

- Coordinator of the basic maintenance facilities (laboratories) of the 2nd School of Engineering (Vercelli) (2003-2010).
- Researchers representative at the 2nd School of Engineering (Vercelli) 2001-2003.
- Coordinator for the basic informatics laboratory 2003-2010.
- Member of the Commission for Programmes of Studies 2003-04 and 2004-05.
- Member of the Commission for promotion and development 2004-05.

At a Department level (Department of Control and Computer Engineering (DAUIN) of Politecnico di Torino) Andrea Sanna held the following offices:

- Coordinator of the Commissions Safety at Work at the (01/01/2006 – present).
- Coordinator of the Commission for the teaching habilitation register at the Department of Control and Computer Engineering (DAUIN) of Politecnico di Torino (01/01/2018 – present).
- Member of the Commission for teaching habilitation registers at the Department of Control and Computer Engineering (DAUIN) of Politecnico di Torino (01/01/2012 – 31/12/2017).
- Member of the Department Council (2001-2002 and 2004-2009)
- Member of the Department Building Commission 10/2001 to 12/2003.
- Member of The Academic Board of the PhD Programme in Computer and Control Engineering (2008-2010).

Andrea Sanna was also member of commission in competitive examinations for:

- Associate professor at Università di Verona (President Prof.ssa Cristina Silvano) on 2019
- Researcher at Università di Pavia (President Prof. Ivo De Lotto) on 2009.
- Researcher at Politecnico di Milano (President Prof.sa Donatella Sciuto ) on 2004.

## Complete list of Andrea Sanna's publications

### 2021

1. Oriti, Damiano; Manuri, Federico; De Pace, Francesco; Sanna, Andrea (in print) Harmonize: a shared environment for extended immersive entertainment. VIRTUAL REALITY. - ISSN 1434-9957.
2. Manni, Alessandro; Oriti, Damiano; Sanna, Andrea; De Pace, Francesco; Manuri, Federico (2021). Snap2cad: 3D indoor environment reconstruction for AR/VR applications using a smartphone device. In: COMPUTERS & GRAPHICS, vol. 100, pp. 116-124. ISSN 0097-8493.
3. Oriti, Damiano; Sanna, Andrea; De Pace, Francesco; Manuri, Federico; Tamburello, (2021) A single RGB image based 3D object reconstruction system. In: 15th International Conference on Computer Graphics, Visualization, Computer Vision and Image Processing.
4. Oriti, Damiano; Brizzi, Paolo; Giacalone, Giorgio; Manuri, Federico; Sanna, Andrea; ... (2021) Machine Learning and Digital Twin for Production Line Simulation: A Real Use Case. In: 6th International Conference on Human Interaction & Emerging Technologies: Future Systems (IHET-FS 2021), CHU-Université de Reims Champagne-Ardenne, France.
5. De Pace, Francesco; Sanna, Andrea; Manuri, Federico; Oriti, Damiano; Panicucci, Simone; (In print) Assessing the Effectiveness of Augmented Reality Handheld Interfaces for Robot Path Programming. In: EAI ICIDM 2021 - 7th EAI International Conference on Interactive Digital Media, On-line, July 30 – August 1, 2021.
6. De Pace, Francesco; Sanna, Andrea; Bai, Huidong; Billingham, Mark; Gorjup, Gal; Liarokapis, Minas. Leveraging Enhanced Virtual Reality Methods and Environments for Efficient, Intuitive, and Immersive Teleoperation of Robots - (In print), 2021 IEEE International Conference on Robotics and Automation

### 2020

7. Manuri, Federico; Sanna, Andrea; Petrucci, Christian Pio. PDIF: Pupil Detection After Isolation and Fitting. - In: IEEE ACCESS. - ISSN 2169-3536. 8(2020), pp. 30826-30837.
8. De Pace, Federico; Manuri, Andrea; Sanna, Andrea and Iñigo Lerga Valencia. An Evaluation of Game Usability in Shared Mixed and Virtual Environments. In "Game Design and Intelligent Interaction," 978-1-83880-010-9. DOI: 10.5772/intechopen.88922
9. De Pace, Francesco; Manuri, Federico; Sanna, Andrea; Fornaro, Claudio. A Systematic Review of Augmented Reality Interfaces for Collaborative Industrial Robots. In: COMPUTERS & INDUSTRIAL ENGINEERING. - ISSN 0360-8352. - 149:106806 (2020).
10. De Pace, Francesco; Sanna, Andrea; Gorjup, Gal; Liarokapis, Minas; Bai, Huidong; Billingham, Mark. Assessing the Suitability and Effectiveness of Mixed Reality Interfaces for Accurate Robot Teleoperation. In Proceedings of the 26th ACM Symposium on Virtual Reality Software and Technology (2020), pp. 1-3.
11. Giovanni, Piumatti; Fabrizio, Lamberti; Andrea, Sanna; Paolo, Montuschi. Robust robot tracking for next-generation collaborative robotics-based gaming environments. - In: IEEE TRANSACTIONS ON EMERGING TOPICS IN COMPUTING. - ISSN 2168-6750. - Vo.8 No. 3. 869-882. <https://doi.org/10.1109/TETC.2017.2769705>

### 2019

12. Lamberti, Fabrizio; Gatteschi, Valentina; Sanna, Andrea; Cannavo', Alberto. A multimodal interface for virtual character animation based on live performance and natural language processing.

INTERNATIONAL JOURNAL OF HUMAN-COMPUTER INTERACTION. - ISSN 1532-7590. 35:18(2019), pp. 1655-1671.

13. Avale, Giancarlo; DE PACE, Francesco; Fornaro, Claudio; Manuri, Federico; Sanna, Andrea. An Augmented Reality System to Support Fault Visualization in Industrial Robotic Tasks - In: IEEE ACCESS. - ISSN 2169-3536. 4(2019), pp. 1-18.
14. Bazzano, Federica; Lamberti, Fabrizio; Sanna, Andrea; Gaspardone, Marco. The impact of field of view on robotic telepresence navigation tasks. DOI:10.1007/978-3-030-12209-6\_4. pp.66-81, 2019. In Communications in Computer and Information Science: Computer Vision, Imaging and Computer Graphics - Theory and Applications - ISBN:978-3-030-12208-9 vol. 983
15. Manuri Federico, Pizzigalli Alessandro, Sanna Andrea. A State Validation System for Augmented Reality Based Maintenance Procedures. APPLIED SCIENCES MDPI, 9(10), 2019. 10.3390/app9102115
16. De Pace, Francesco; Manuri, Federico; Sanna, Andrea; Zappia, Davide. Virtual and Augmented Reality Interfaces in Shared Game Environments: A Novel Approach. In proceedings of the 10th EAI International Conference, INTETAIN 2018, Guimarães, Portugal, November 21-23, 2018.273(2019), pp. 137-147.
17. Manuri, Federico; Sanna, Andrea; Lamberti, Fabrizio. Single view vs. multiple views scatterplots. In: INTERNATIONAL JOURNAL OF ELECTRICAL AND COMPUTER ENGINEERING. - ISSN 2088-8708. 9:2(2019), pp. 1426-1436.
18. De Pace Francesco, Manuri Federico, Sanna Andrea, Zappia Davide. A Comparison Between Two Different Approaches for a Collaborative Mixed-Virtual Environment in Industrial Maintenance. In Frontiers in Robotics and AI, vol. 6, 2019, page 18, DOI=10.3389/frobt.2019.00018, ISSN=2296-9144.
19. Manuri, Federico; DE PACE, Francesco; Sanna, Andrea. Augmented Reality for Human-Robot Interaction in Industry. In Encyclopedia of Computer Graphics and Games. (2019), pp. 1-7. ISBN: 978-3-319-08234-9

## **2018**

20. De Pace, F., Manuri, F., Sanna, A., & Zappia, D. (2018, June). An Augmented Interface to Display Industrial Robot Faults. In International Conference on Augmented Reality, Virtual Reality and Computer Graphics (pp. 403-421). Springer, Cham.
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