

Personal information

Surname(s) / First name(s)

Telephone(s)

Email(s)

Nationality(-ies)

Date of birth

Website

Activity

Work Experience

Dates

Occupation or position held

Research Topics

Main activities and responsibilities

Name and address of employer

Dates

Occupation or position held

Main activities and responsibilities

Ruffaldi Emanuele

+393291610680

emanuele.ruffaldi@gmail.com

Italian

7th May, 1978

<http://www.eruffaldi.com>



Research and Development on high-end interaction systems between humans and robots in Augmented and Virtual Environments. Expertise in the underlying software infrastructure involving networking, system-level optimization and data analysis via machine learning.

May 2007 - Present

Assistant Professor

Virtual and Augmented Reality: software, systems and interaction (2003-); Haptic Rendering (2002-); Virtual Environments for Human Training (2006-); Machine Learning for industrial environment and robotics (2010-); Wearable Systems for Ergonomics (2011-); Human-Centered Robotics (2012-).

- Team manager as leader of the "Sensing, Modeling and Learning Group" comprising 3 PhDs, 1 postdoc and 1 engineer
- Software development and system design for research and industrial projects
- Principal Investigator of research grants with financial responsibility: currently 1 European projects, 1 national, 1 industrial ones (overall 300k€/ year)
- Effort estimation, break down and coordination of activities
- Grant writing at European, national and industrial level, both as PI or as contributor
- Scientific service to community: review for conference and journals, Co-Chair of IEEE Technical Committee on Haptics. Organization of international events (IEEE Program Chair, workshop organization)
- Tutoring of PhD and master students (3 PhDs and 15 master in the past)
- Lecturing at PhD and master level

Scuola Superiore Sant'Anna, Pisa, Italy - PERCRO laboratory

July 2006 - April 2007

Research Fellow

Contribution to the definition of the system architecture of a haptic simulation of interaction of textiles (**HAPTEX**). Development of a framework in C++/OpenGL/Chai3D for the design of haptic-enabled games and applications under supervision of Prof. Frisoli.

Name and address of employer	Scuola Superiore Sant'Anna, Pisa, Italy - PERCRO laboratory
Dates	August 2005 - June 2006
Occupation or position held	Visiting Student
Main activities and responsibilities	Research activity funded by grant AO 04-G66 "Virtual Reality Planning In Reconstructive Trauma Surgery" of MD. Sabine Girod, under the tutoring of Prof. Ken Salisbury and Federico Barbagli. Research on haptic collision detection for supporting the operation planning.
Name and address of employer	Stanford University, BioRobotics Laboratory
Dates	June 2003 - August 2003
Occupation or position held	Visiting Scholar
Main activities and responsibilities	Research period on evaluation of haptic experiments and CAVE
Name and address of employer	University College of London, Computer Science Department

Education and training

Dates	January 2003 - June 2006
Title of qualification	PhD
Principal subjects	PhD in Perceptual Robotics at PERCRO Laboratory with a Thesis entitled "Multirate and Perceptual Techniques for Haptic Rendering in Virtual Environments", tutor Prof. Massimo Bergamasco. Defended with Honors on 6th June 2006
Organization	Scuola Superiore Sant'Anna, Pisa, Italy
Dates	October 1997 - September 2003
Title of qualification	Diploma
Principal subjects	Five year grant with tight selection in parallel to Master studies. Thesis on "Haptic Scripting for setup of experiments". Defended with Honors on 10th September 2003.
Organization	Scuola Superiore Sant'Anna, Pisa, Italy
Dates	October 1997 - October 2002
Title of qualification	Master
Principal subjects	Master in Computer Engineering with a Thesis on "Integration of Database and interactivity in a visualization system based on the Information Landscape approach". Completed with Honors on 8th October 2002.
Organization	Università di Pisa, Italy

Experience

Research Results

This section presents specific activities performed in the context of the research activity

Publications in the areas of virtual reality, haptic rendering, haptic devices, human training in virtual environments, wearable sensing: 22 ISI Journal papers, 90 peer-reviewed conference papers (54 IEEE/ACM), 10 book chapters, 29 posters and workshops, 9 invited talks, 2 patents. H-Index: 14 ([Scholar](#)), 11 (Scopus), Erdos number 5. Best poster award at MMVR14. Visual listing of publications available [here](#)

Dates	2015-Present
Activity	Research on Intention Recognition for Autonomous Driving
Details	As part of an industrial project for an automotive company aimed at estimating the behavior of vehicles in highway. Development of a C++ software framework based on probabilistic graphical models for intention prediction.
Dates	2015-2017
Activity	Research on Diagnostician User Interface for Haptic Remote Medicine

Details	Research and Development on a new Augmented Reality interface for interacting with a remote USG and palpation robot based on encountered haptic paradigm. Leading research on the interaction, component selection, core development in C++/OpenGL leading a new component framework for Mixed Reality interaction (CoCo). Papers: A , B .
Dates	November 2013 to December 2015
Activity	Transfer of Human Abilities through Robot
Details	Research on a Baxter robot based system for the transfer of human abilities through robotics. Multi-camera sensor fusion, trajectory learning and AR feedback. Paper at VRST .
Dates	March 2014 to November 2014
Activity	Pano-stereoscopic system for tele-presence
Details	System definition, component selection, core development (C++/OpenGL) and optimization for a system based on 5 pairs of cameras for real-time tele-presence and HMD.
Dates	October 2006 to December 2011
Activity	Platform for Sport Training in Virtual Environments
Details	Research, development and team coordination on a system for training Rowing in Virtual Environments (SPRINT) based on a multimodal platform. The system employed audio feedback, vibrotactile feedback, motion capture, integration of sensors such as VO2. Architecture design, interaction design, definition of feedback, 3D graphics development. Supervision of a PhD during the period and coordination of the team involving multiple partners for the development of the platform and execution of experiments.
Dates	2012-Present
Activity	Ergonomic Assessment using Wearable Systems
Details	Research, development and management of a system (project page) for the real-time assessment of workload based on a wearable system capable of precision reconstruction of arm motion and EMG workload. Reconstruction algorithm core development based on UKF in C++/Eigen, co-development and optimization of the firmware STM32 in C. Experiment design and component selection.
Dates	March 2009-2016
Activity	Mobile Haptic Platform for Rehabilitation
Details	Research and development of the MOTORE mobile rehabilitation device, currently being commercialized. Software platform design and development in C++/Qt, contribution to the design of the haptic rendering, co-development and optimization of the firmware in Simulink and C, communication protocol, project management. Papers: A , B .
Dates	2011-2015
Activity	Machine Learning Anomaly Detection for Industry
Details	Research and team management for the creation of new algorithms, development and plant integration of systems for the identification of anomalies in data. Applied in a C++ software for the Italian electric utility.
Dates	January 2010-March 2011
Activity	Haptic Rendering and Interaction for Virtual Textiles
Details	Development of an interaction system for the haptic interaction with virtual textiles simulated using a FEM model. Algorithm and interaction design, development in C++ and OpenCL.
Dates	January 2008-September 2008
Activity	Haptic Virtual Laboratory

Details	Design and development of a system for the execution of multi user experiments involving haptic rendering and physics based simulation. Implemented in C++, OpenGL and XVR.
Dates	2002-2010
Activity	Information Landscape Visualization System
Details	Research and development of a system for immersive data visualization. The system has been developed in C++/ OpenGL and designed to work in different types of Virtual Environments, from CAVE to HMDs.

Research Grants

	This section presents the research grants of which I have been Principal Investigator or Fund Manager ordered
Dates	2017-2019 (2 years)
Name	SailPORT
Sponsor	INAIL (BRIC 2016)
Grant Size	528k for the 10-partners project, 200k direct
Details	Scientific Coordinator of a project funded by the Italian National Institute for Insurance against Accidents at Work (INAIL) on safety of workers in sea ports. Dealing with computer vision for people flow and accident analysis, biomechanical analysis for safety at work. SSSA is the coordinator, complemented by other 9 local health entities (ASL).
Dates	2015-2018 (3.5 years)
Name	RAMCIP http://www.ramcip-project.eu/
Sponsor	EU H2020
Grant Size	335k, 8 partners
Details	PI and Task Leader in an European Research project coordinated by CERTH (GR) on Robotic Assisted Living for MCI people. Research on (1) estimation of biomechanical state of the user from the point of view of the robot, (2) quantification of users skills and their progress along time, (3) human-robot interaction based on innovative AR.
Dates	2014-2017 (3 years)
Name	PELARS http://www.pelars.eu
Sponsor	EU FP7 Technology Enhanced Learning
Grant Size	370k€, 12 partners
Details	PI, WP Leader, Technology Manager and Scientific Board member in an European project coordinated by CIID (DK) on Learning Analytics in Projectual-based learning. Research on (1) activity recognition based on vision (2) Learning Analytics methods for student profiling.
Dates	2015-2016 (2 years)
Name	MMRISK
Sponsor	Industrial
Grant Size	150k€
Details	PI of an Industrial research project on providing autonomous cars understanding of external vehicle and obstacle behavior. This activity is associated to the interest in general, probabilistic based, modeling of behavior.
Dates	2015 (1 year)
Name	SMOOTI
Sponsor	Industrial funded by Telecom Italia
Grant Size	35k€
Details	PI in an Industrial research project on prototyping a wearable system for real-time ergonomics during work activity. This activity continues and consolidates the previous ERGANE project.
Dates	2012-2015 (3 years)

Name	ERGANE
Sponsor	Italian CCM Ministry of Health - final workshop
Grant Size	105k€
Details	PI in a Research project aimed at designing a wearable system based on inertial and EMG sensors for the ergonomic assessment in selected working activity. Leading the design on the motion reconstruction algorithms
Dates	2011-2013,2014,2016
Name	Anomaly Detection in Industrial Plants
Sponsor	Italian Electric Utility
Grant Size	110k€
Details	PI on two research projects funded by the Italian electric utility on the identification of anomalies in power plants. The most recent is related to the anomaly detection on a coal miller based on Machine Learning applied to large amount of historical data. The older was based on leakage detection based on the data recorded in an array of microphones.
Dates	2015-2016 (15 months)
Name	Future Challenges website
Sponsor	H2020 CSA
Grant Size	25k€, 3 partners
Details	PI in an European project for selection of research Inducement Prizes coordinated by NESTA (UK). Consulting on the selection of the technologies to be investigated for the preparation of the challenges.

Participated Projects

Main participated projects:

1. Industrial Trenitalia funded VIGILANTE (2016): computer vision face-based health status assessment
2. Regional Project SMARTGEO (2017-2018): machine learning for geothermal plant monitoring
3. EU Project FP7 REMEDI (2014-2017): managing the AR Diagnostician User Interface
4. EU Project FP6 SKILLS (2006-2011): Workpackage Leader for the Demonstrator on Rowing Learning and transfer, researcher on the digital representation of skills
5. EU Project FET HAPTEX IST-2004-6549 (2004-2007): contributor to this research project in the area of haptic and tactile feedback for the interaction with textiles - [Brochure](#)
6. EU Enactive NoE IST-2004-002114 (2005-2009)
7. AO 04-G66 "Virtual Reality Planning in Reconstructive Trauma Surgery" Stanford University - research activity during the PhD period abroad

Other participated projects:

1. Industria 2015 DOC (2012-2014) - vibrotactile for blind people
2. PRIN AIDA 2006 - "Advances in haptic Interfaces Design and Applications: soft contact, multi-point and multi-modal integration"
3. Regione Toscana POR-CREO Mantas (2009-2010)
4. EU Project FP7 BEAMING (2012-2013)
5. EU Project FP5 PureForm IST-2000-29580 (2003-2004)
6. EU Project FP5 CREATE IST-2001-34231 (2001)
7. FIRB ViCoM (2002-2005) - "Virtual Immersive Communications"

Scientific Community

Community Service

- Co-Chair of Information Dissemination of the IEEE TC on Haptics managing <http://www.worldhaptics.org/> and contributing to the meetings of the technical meeting. In this period the TC has won the prize as most active TC in the IEEE Robotics and Automation Society (RAS).
- Founding member of the Technical Committee on Human Motion Understanding and Motion Synthesis of IEEE RAS.
- Contributed to the "Future Media and 3D Internet Task Force" of the Networked Media Unit of European Commission ([whitepaper](#), doi:10.2759/11972)

Referee

Journal Reviewer:

- Nature Scientific Reports 2017
- MDPI Sensors 2017
- IEEE Transactions on Visualization and Computer Graphics 2015
- Robotica 2015
- Frontiers in Robotics and AI 2015
- International Journal of Industrial Ergonomics 2015
- Journal of Human-Robot Interaction 2014
- Behavioral Research Methods 2014
- IEEE Transaction on Haptics 2008-2017
- IEEE Transaction on Robotics 2013-2014
- IEEE Transaction on Mechatronics 2015-2016
- Journal of Sport Technology 2014
- Journal of Intelligent and Robotics Systems 2014
- International Journal of Human-Computer Studies 2014
- ACM Transactions on Applied Perception 2013
- ITE Transactions on Media Technology and Applications 2013
- Elsevier Multimedia Systems Journal 2008-2015

Committee Member of Conferences: – IEEE ICORR Associate Editor 2015,2017
– IEEE RO-MAN Associate Editor 2011,2013 – IEEE IROS Associate Editor 2010

Conference Reviewer:

– IEEE VR 2015 – Humanoids 2015 – IEEE RO-MAN 2007-2014 – IEEE IROS 2010-2014 – IEEE Haptic Symposium 2014 – IEEE ICRA 2011-2016 – IEEE MED14,MED16 – IEEE VRST 2013,2015 – EuroHaptics 2008-2016 – WorldHaptics 2007-2017 – ACM ICML 2017

Memberships: IEEE RAS, EuroHaptics Society

Scientific Events

Conferences

1. Publication Chair of [EuroHaptics 2018](#) in Pisa
2. Publication Chair of [IEEE WorldHaptics 2017](#) in Munich
3. Publicity Chair of [IEEE WorldHaptics 2015](#) in Evanston
4. Program Chair of IEEE RO-MAN, 19th IEEE International Symposium in Robot and Human Interactive Communication, 2010 in Viareggio
5. General Chair of ENACTIVE08, 5th Enactive International Conference on Enactive Interfaces , 2008 in Pisa

Workshops and Special Sessions

1. Co-Chair of the Workshop on "[Multimodal Learning Analytics](#)" (MMLA) inside LAK 2017, Canada
2. Co-Chair of the Special Session on "Challenges of R&D in Robotics", R&D Management Conference 2015, Pisa
3. Co-Chair of the Special Session on "Robotics and Automation for Health", MED14, 2015
4. Program Chair of the Workshop on "Learning Analytics for Project-based Learning", 17th International Conference on Artificial Intelligence in Education (AIED 2015)
5. Program Chair of the Workshop on "Feedback from Multimodal Interactions in Learning Management Systems", 7th, International Conference on Educational Data Mining (EDM 2014), London, [Website](#)
6. Co-Chair of the Workshop on "Skills Capture And Transfer" at IEEE RO-MAN 2008, Munich
7. Co-Chair of the Tutorial on "Skills" at RSS 2008, Zurich

In addition Session Chair of several IEEE conferences, like IEEE IROS 2015.

Tutoring

Phd Students

Active PhD students (4):

1. Lorenzo Landolfi (aa. 2016/2017) - computer vision for human activity
2. Alessandro Graziano (aa. 2015/2016) - funded by H2020 RAMCIP on human-robot interaction
3. Giacomo Dabisias (aa. 2014/2015) - funded by FP7 PELARS on object and action recognition

Graduated (5):

1. Giulia Bassani (aa.2013/2014) - PhD defended in 2017 - funded by Telecom Italia on wearable energy harvesting
2. Alessandro Di Fava (aa.2011/2012) - PhD defended in 2016 - on advanced robot control
3. Lorenzo Peppoloni - PhD defended in 2015 - graduated on wearable biomechanic assessment
4. Leonard Johard - PhD defended in 2013 - now on Innopolis - machine learning
5. Alessandro Filippeschi - PhD defended in 2012. - now at SSSA - rowing training in VE
6. Vittorio Lippi - PhD defended in 2012 - now at Freiburg University - robot gait control

Participation to final PhD evaluation committee:

1. Alessio Matiz, TeCiP SSSA, 2017
2. Gastone Papini, TeCiP SSSA, 2016
3. Matteo Tanzini, TeCip SSSA, 2016
4. Michele Barsotti, TeCiP SSSA, 2016
5. Pasquale Buonocunto, TeCiP SSSA, 2016
6. Raffaello Brondi, TeCiP SSSA, 2015

- Federica Fioretti, high-speed point cloud processing
- Alessandro Cattaneo, Driver analysis for ADAS
- Matteo Pampana, Vision for surface property characterization (Embedded)
- **Michele Palermi**, Code generation per Probabilistic Graphical Models (Embedded)
- Lucia Saracino, 2016, Assessment Design and Algorithms for Rehabilitation Robotics (Robotics)
- **Pietro Loreface**, 2016, Probabilistic Graphical Models (Embedded)
- **Michele Mambrini**, 2016, AR Head per il progetto RAMCIP (Robotics)
- **Erika di Stefano**, 2015, "Detection and pose estimation of texture-less objects in a multi-camera system. Application to visual servoing and manipulation with a ROS-guided semi-humanoid robot in an industrial context." (Robotics)
- Di Napoli Giuseppe, 2015, "Design, simulation and development of a decentralized control for a robotic manipulator" (Robotics)
- **Graziano Alessandro**, 2015, "Robust visual hand pose estimation and tracking matching inverse kinematics on synergistic subspaces" (Robotics)
- Patrinostro Simone, 2015, "A Haptic-Assisted Guidance System For Working Machines Based on Virtual Force Fields" (Robotics)
- Michele Linardi, 2014, "ULISSE Ultra compact iSAX Index for Variable-Length Queries on Data Series", University of Trento
- **Giacomo Dabisias**, 2014, "A framework for static allocation of parallel OpenMP code on multi-core platforms" (Informatics and Networking)
- **Filippo Brizzi**, 2014, "A framework for static allocation of parallel OpenMP code on multi-core platforms" (bis) (Informatics and Networking)
- **Corucci Francesco**, 2013, "Robotic perception and control for a demolition task in unstructured environments" (Computer Engineering)
- **Michele Vannoni**, 2009, "System for the recognition and evaluation of movements" (Computer Science)
- **Mohamed Machkour**, 2009, "Dynamic model of an athlete for a simulator of rowing" (Computer Engineering)
- **Vittorio Lippi**, 2008, "Design and Development of a Human Gesture Recognition System in a Threed-dimensional Interactive Virtual Environment" (Computer Engineering)
- **Davide Sechi**, 2007, "Graphical 3D editor for a CAVE system" (Computer Science)

Full Courses

1. Course on "Computer Visions for Robots and Humans" for PhD at SSSA, 2CFU (2016-2017)
2. Course on "Interaction in Virtual Environments" for PhD and master students at SSSA, 6CFU 50 hours (2012-2016, 4 years)
3. Course on "Information Visualization" at UNIPI, 5 CFU (2009-2011, 3 years)
4. Course on "Elements of Matlab and Simulink" (2008)
5. Course of "Haptics and haptic rendering" in the International Master on Virtual Environments Technologies for Industrial Applications at SSSA together with Dr. Avizzano (2009)
6. Course on "Physical Based Modeling" for master students at SSSA (2007)
7. Course in Vision Based Posture Tracking for PhD (2 CFU, 2016 and 2017)

Lectures in PhD Courses, Postgraduate or Summer Schools

1. (2017) Lecture on Deep Learning for Computer Vision in the PhD course "Neural Networks" of Prof. Buttazzo, SSSA
2. (2016) Lecture at the IEEE Italy Section Medical Informatics Summer School (ISMISS) on "Wearable body tracking for Occupational Biomechanics and Telemedicine"
3. (2013-2017) Lecture on Writing Research Grants in the PhD course "How to prepare a research proposal" (Prof. Buttazzo)
4. (2013-2015) Lecture at the Master Telecom "Smart Cities" on innovations in Perceptual Robotics
5. (2012) Lecture at the Human-Robot Interaction Summer School, Gargonza, on "Biomechanical analysis of skilled performance"
6. (2011) Lecture at the SKILLS 2011 Summer School, Gargonza, on "Machine Learning for Skill Training in Virtual Environments"
7. (2009) 5 Lectures at the "International Master in Virtual Environment Technologies for Industrial Application" of SSSA on the topic of Haptics
8. (2008) 2 Lectures in the PhD Course on Virtual Reality Design and Application in Haptics of University of Siena, on "6DoF Interaction" and "Perspectives in Haptics"
9. (2007) Lecture at the 3rd Summer School of ARIS*ER project, Gallipoli on "Volume Based Haptic Rendering", 11st June
10. (2007) Lecture at the 2nd Advanced Study Institute on "Product Engineering: Tools and Methods based on Virtual Reality Technology", Chania, Creete, 2nd June on "Advanced Haptic Systems"

1. (2016) Module of 10 hours in the course "Component Based Development" at SSSA-UNIFI on Multicore and GPU computing (Prof Buttazzo)
2. (2016-2017) Module of 5 hours in the course "Introduction to Matlab and Simulink" of (Prof. Ciaramella)
3. (2016) Lecture on "H2020 Framework Opportunities" at the School of European Project Planning, Florence
4. (2007) Talk on "Haptic simulation and haptic interaction" inside the Tutorial "Haptic Simulation, Perception and Manipulation of Deformable Objects" at the Eurographics 2007 Tutorial
5. (2007) Tutorial on "Haptic Rendering with XVR" at the Programming VR applications using the XVR technology, Pisa, Italy, 31st May
6. (2007-2009) Lecture at the Course of Mechatronics at UNIFI on Multi-process communication and Physical Models
7. (2009) Talk on "Ambienti virtuali per il training sportivo: dal virtuale al reale nel canottaggio", Science Cafè of SSSA
8. (2006) Lecture on "6DOF Haptic Rendering and Algorithm Benchmarking" inside the CS277 Course Experimental Haptics of professor Ken Salisbury at the Stanford University
9. (2003-2008) Lectures on Web3D and architectures of Virtual Reality applications in the course held by Prof. Bergamasco and Dr. Carrozzino entitled Virtual Reality at University of Pisa in the Computer Science faculty (2003-2008): Collision detection and Haptics on the Web (2006,2008) - Collision detection and response for Virtual Environments. Integration of Haptics with the XVR graphics engine (2005) - Architecture and Concepts for Software in Virtual Environments (2004), Overview of Web3D technologies and perspective (2003)

Personal skills and competences

Mother tongue(s)

Other language(s)

Self-assessment European level^()*

English

Management skills and competences

Italian

Understanding		Speaking		Writing
Listening	Reading	Spoken interaction	Spoken production	
C1	C1	C1	C1	C1

^(*) Common European Framework of Reference (CEF) level

- Activity coordination in the team, and at the level of consortium as Workpackage leader
- Presentation of results at Review meeting
- Effort estimation, break down, reporting
- Financial accounting rules for projects funded by national or European calls

Technical skills and competences

Listing of Open Source contributions: [here](#)

- Main Programming Language: C++ and cross-platform programming. Use of C++ since 1995 in networked, multi-threaded applications ranging from robotics, virtual reality and machine learning. Library and tools development.
- Component-based, concurrent and soft real-time programming
- Secondary Languages: Python and Matlab used for tooling and data analysis. Talk at EuroPython 2006
- Languages used in the past: x86 assembler, PHP, Java, C#, Delphi
- C++ Libraries: Qt, Eigen, boost, OpenCV, Aruco, PCL
- Parallel and GPU computing: OpenMP ([Paper](#)) and CUDA
- Programming Tools: cmake, Doxygen, graphviz
- Unit Testing tools: catch
- Version control systems: git, previously subversion and mercurial
- Software Management Tools: Jenkins, rhodecode
- Use of Web technologies (HTML5, REST and Javascript) mainly for exposing software functionalities
- Daily usage of LaTeX for reporting and documentation, automatic report generation
- Architecture Tools: interest in SysML

3D and Virtual Reality Technologies

- OpenGL API: 2.x and 3.3, experiments with WebGL
- Display with Oculus HMD and HTC Vive, experience in CAVE
- Motion Capture with Vicon
- Application development with custom framework (XVR, CoCo) and Unity
- Research and development experience with haptic interfaces: worked with Phantom, custom Exoskeleton, custom desktop devices
- Disciplined approach in Transformation Graphs for telepresence systems

Data Processing

- Mainly Matlab/Simulink with C++ adaptation, machine learning methods with interest in probabilistic graphical models for static and dynamic models.
- Sensor fusion based on non-linear Kalman filtering
- Interest in data management software with provenance for traceable research

Platforms

- Operating Systems: OSX (main), Linux (development) and in the past Windows (low level), with some exposure to OpenVMS
- Multiplatform and cross-platform development with C++
- Knowledge of internal structure of operating systems (Windows and Linux) and the system stack
- Use of Virtualization technologies for improving software development: Vagrant and Docker
- Embedded systems: some experience with ARM solutions in particular STM32, and in the past use of TI C2000
- Network programming using sockets or higher libraries such as ZeroMQ
- Robotic development using ROS

Annexes

- | | |
|---|----------------------|
| 1 | List of publications |
|---|----------------------|

Torre del Lago Puccini, October 1, 2017

Emanuele Ruffaldi

Appendix: List of publications

- ORCID [0000-0001-6084-6938](https://orcid.org/0000-0001-6084-6938)
- Google Scholar [Profile](#)

Underlining marks co-authors who were funded members of my research group *Italics* marks co-authors who I supervised or co-supervised being members of another research group Visual listing is available at this [link](#).

Journal Papers

2017

22. Tripicchio Paolo, **Ruffaldi Emanuele**, Gasparello Paolo, Eguchi Shingo, Kusuno Junya, Kitano Keita, Yamada Masaki, Argiolas Alfredo, Niccolini Marta, Ragaglia Matteo & Avizzano Carlo Alberto (2017). A Stereo-Panoramic Telepresence System for Construction Machines. *Procedia Manufacturing* [2351-9789](#), 11 (), (pp. 1552 - 1559). [DOI](#) ([pdf](#))
21. Di Cesare Giuseppe, Sparaci Laura, Pelosi Annalisa, Mazzone Luigi, Giovagnoli Giulia, Menghini Deny, **Ruffaldi Emanuele** & Vicari Stefano (2017). Differences in action style recognition in children with autism spectrum disorders. *Frontiers in Psychology* 1664-1078, XX (XX), [DOI](#) ([pdf](#))
20. Filippeschi Alessandro, Schmitz Norbert, Miezel Markus, Bleser Gabriele, **Ruffaldi Emanuele** & Stricker Didier (2017). Survey of motion tracking methods based on inertial sensors: a focus on upper limb human motion. *Sensors* 1424-8220, 17 (6), [DOI](#) ([pdf](#)) *IF: 2.68*
19. Peppoloni Lorenzo, Lawrence EmilyL., **Ruffaldi Emanuele** & Valero-cuevas FranciscoJ. (2017). Characterization of the disruption of neural control strategies for dynamic fingertip forces from attractor reconstruction. *PLOS ONE* 1932-6203, 12 (2), (pp. 1-23). [DOI](#) ([pdf](#)) *IF: 2.81*

2016

18. Johard Leonard & **Ruffaldi Emanuele** (2016). Self-organizing trajectories. *Pattern Recognition Letters* [0167-8655](#), 84 (pp. 177-184). [DOI](#) ([pdf](#)) *IF: 2.00*
17. Di Cesare Giuseppe, Valente Giancarlo, Di Dio Cinzia, **Ruffaldi Emanuele**, Bergamasco Massimo, Goebel Rainer & Rizzolatti Giacomo (2016). Vitality forms processing in the insula during action observation: a multivoxel pattern analysis. *Frontiers in Human Neuroscience* [1662-5161](#), 10 (267), [DOI](#) ([pdf](#)) *IF: 3.42*
16. Peppoloni Lorenzo, Filippeschi Alessandro, **Ruffaldi Emanuele** & Avizzano Carlo Alberto (2016). A novel wearable system for the online assessment of risk for biomechanical load in repetitive efforts. *International Journal of Industrial Ergonomics* [0169-8141](#), 52 (), (pp. 1-11). [DOI](#) ([pdf](#)) *IF: 1.42*

2015

15. **Ruffaldi Emanuele**, Peppoloni Lorenzo & Filippeschi Alessandro (2015). Sensor fusion for complex articulated body tracking applied in rowing. *Journal of Sport Engineering and Technology* [1754-3371](#), 229 (2), (pp. 92-102). [DOI](#) ([pdf](#)) *IF: 0.46*

2014

14. Tripicchio Paolo, Loconsole Claudio, Piarulli Andrea, **Ruffaldi Emanuele**, Tecchia Franco & Bergamasco Massimo (2014). On multiuser perspectives in passive stereographic virtual environments. *Computer Animation and Virtual Worlds* [1546-4261](#), 25 (1), (pp. 69-81). [DOI](#) ([pdf](#)) *IF: 0.42*
13. Avizzano Carlo Alberto, Satler Massimo & **Ruffaldi Emanuele** (2014). Portable haptic interface with omni-directional movement and force capability. *IEEE Transactions on Haptics* [1939-1412](#), 7 (2), (pp. 110-120). [DOI](#) ([pdf](#)) *IF: 2.00*
12. Hoffmann CharlesP., Filippeschi Alessandro, **Ruffaldi Emanuele** & Bardy Benoit (2014). Energy management using virtual reality improves 2000-m rowing performance. *Journal of Sports Sciences* [1546-4261](#), 32 (6), (pp. 1-9). [DOI](#) ([pdf](#)) *IF: 0.42*

2013

11. Filippeschi Alessandro & **Ruffaldi Emanuele** (2013). Boat Dynamics and Force Rendering Models for the SPRINT System. *Human-Machine Systems, IEEE Transactions on* [2168-2291](#), 43 (6), (pp. 631-642). DOI (pdf) IF: 2.49
10. Varlet Manuel, Filippeschi Alessandro, Ben-sadoun Gregory, Ratto Michael, Marin Ludovic, **Ruffaldi Emanuele** & Bardy Benoit (2013). Virtual Reality as a Tool to Learn Interpersonal Coordination: Example of Team Rowing. *Presence: Teleoperators and Virtual Environments* [1054-7460](#), 22 (3), (pp. 202-2015). DOI (pdf) IF: 0.75

2012

9. **Ruffaldi Emanuele** & Filippeschi Alessandro (2012). Structuring a virtual environment for sport training: A case study on rowing technique. *Robotics and Autonomous Systems* [0921-8890](#), 61 (4), (pp. 390-397). DOI (pdf) IF: 1.95

2011

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31. Bassani Giulia, Jean-mistral C. & **Ruffaldi Emanuele** (2017). Energy harvesting from a backpack with an auxetic dielectric elastomer generator. In *7th international conference on Electromechanically Active Polymer (EAP) transducers and artificial muscles*. :
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27. Peppoloni Lorenzo, **Ruffaldi Emanuele** & Valero-cuevas FranciscoJ. (2016). The strength dexterity test quantifies age-related differences in the sensorimotor control dynamics. In *Neuromechanics*. :

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26. **Ruffaldi Emanuele** (2015). Future Challenges: Designing ICT Prizes for Europe. In *IROS Workshop on Robot Competitions: What did we learn?*. : [\(pdf\)](#)
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21. Lenzo Basilio, Filippeschi Alessandro, **Ruffaldi Emanuele**, Frisoli Antonio, Salsedo Fabio & Bergamasco Massimo (2014). ALEX, a new exoskeleton for power assist and motor learning. In *International Workshop on Wearable Robotics*. : [\(pdf\)](#)

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10. Aprile Walter, **Ruffaldi Emanuele**, Frisoli Antonio & Bergamasco Massimo (2007). Managing and displaying user track data with Python. In *EuroPython 2007 Conference, Vilnius*. :
9. Tecchia Franco, **Ruffaldi Emanuele**, Carrozzino Marcello, Frisoli Antonio & Bergamasco Massimo (2007). Museum on the Web 2007: Proceedings. In *Multimodal interaction for the Web*. : Toronto: Archives and Museum Informatics

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Invited Talks

2017

12. **Ruffaldi Emanuele** (2017). Autonomous Driving Systems as Robots. At *Alfa Romeo and Maserati Engineering School*, host Prof. Marko Bertogna. Modena, Italy

2016

11. **Ruffaldi Emanuele** (2016). Wearable body tracking for Occupational Biomechanics and Telemedicine. At *IEEE Summer School on Medical Informatics*. Biblioteca Giovanni Bovio, Trani <http://www.ismiss.it/>
10. **Ruffaldi Emanuele** (2016). Occupational Biomechanics and Virtual Ergonomy. At *Personal injury damages compensation and biomechanics. Erasmus + Project Areyoufine?*. Scuola Superiore Sant'Anna, Pisa, Italy

2015

9. **Ruffaldi Emanuele** (2015). Multimodal systems for training in Virtual Environments. At *Skill training with virtual reality and video-game platforms inside 14th European Congress of Psychology*. Milano, Italy
8. Peppoloni Lorenzo, **Ruffaldi Emanuele**, Filippeschi Alessandro & Avizzano Carlo Alberto (2015). Wearable solution for online assessment of biomechanical load risks. At *Bridging Gaps between Computational Biomechanics and Robotics: Theory, Tools, and Applications, Tutorial inside IEEE RAS ICRA*. Seattle, Washington ([pdf](#))

2012

7. **Ruffaldi Emanuele** (2012). Biomechanical analysis of skilled movements. At *Biomechanics in Human-Robot Interaction Summer School*. Gargonza, IT

2011

6. **Ruffaldi Emanuele** (2011). Training Rowing with Virtual Environments. At *The International SKILLS Conference*. Montpellier, Italy ([pdf](#))
5. Bergamasco Massimo & **Ruffaldi Emanuele** (2011). Haptic Interfaces for Embodiment in Virtual Environments. At *20th years of IEEE RO-MAN*. Atlanta, US ([pdf](#))
4. **Ruffaldi Emanuele** (2011). Robot-assisted training in sports: not requested or too challenging?. At *Mini-symposium on Robotics for Sport Training inside IEEE EMBC*.
3. **Ruffaldi Emanuele** (2011). Machine Learning for Skill Training in Virtual Environments. At *SKILLS Summer School*. Gargonza, IT

2008

2. **Ruffaldi Emanuele** (2008). Natural Interaction and training with touch. At *Natural Interaction, only with your body organized by MIMOS*. Florence, IT
1. **Ruffaldi Emanuele** (2008). Touch and Motion. At *Latest developments in Computer Graphics technology in a Virtual Museum at Hosei University*, host Prof. Hisato Kobayashi. Tokyo, Japan

Demonstrations

2015

4. **Ruffaldi Emanuele** & Others (2015). ReMeDi DiagUI AR system. In *Innovative Surgical Robotics Forum* at London

2011

3. **Ruffaldi Emanuele** & Filippeschi Alessandro (2011). The SPRINT Rowing System. In *1st SKILLS International Conference* at Montpellier, France

2008

2. **Ruffaldi Emanuele** & Tripicchio Paolo (2008). Haptic Virtual Laboratory. In *IEEE Haptic Symposium* at Reno, Nevada, USA

2005

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