**DESCRIPTION**

This research area aims at achieving the 3C convergence, i.e., the deep integration of computing, control and communication for the design of modern complex systems, which include cyber-physical, real-time, embedded, hardware and software subsystems, with applications ranging from robotics to automotive, avionics, energy, biology. The core research on computing aspects is related to modeling, verification and optimization of intelligent cyberphysical systems, with particular emphasis on models of computation, manipulation of description languages, semi-formal and formal verification, hardware and software automated synthesis and compilation, correct-by-construction refinement and optimization, fundamental CAD algorithms, development of power-aware parallel applications for GPU architectures. System theory concepts are used to model dynamic systems, and to interface dynamic systems to computation elements and communication networks. They are mainly investigated from the point of view of the design of robotic tele-operated systems, virtual environments for surgical applications, mobile robots and multi-robot systems, and optimal co-design of communication and control strategies for networked and embedded control systems. Finally, research in communication is focused on the design, analysis and evaluation of network protocols and architectures, considering all layers, from data link, to routing, to congestion control, to overlay; moreover, with the so-called network synthesis, computation, communication and control aspects are addressed in a holistic way to face the complexity of large pervasive applications.

**LABORATORIES**

**Altair:** Non conventional Robotics  
**ESD/NES:** Techniques for automatic design of electronics Systems and networks  
**PARCO:** Parallel Computing

**PROJECTS (2012-2016)**

- **TOUCHMORE:** Automatic Customizable Tool-chain for Heterogeneous Multicore Platform Software Development. A FP7 EU project aiming at creating an innovative tool chain for the automatic generation of code running on a multicore platform.

- **INTCATCH:** (Development and application of Novel, Integrated Tools for monitoring and managing Catchments) is an H2020 project that has the objective to improve the techniques for monitoring and managing waterbodies such as lakes and rivers. UNIVR will develop autonomous and radio controlled boats to provide better access and coverage of such waterbodies.

- **MURAB:** (MRI and Ultrasound Robotic Assisted Biopsy) is an H2020 project that has the objective to improve the techniques of breast cancer diagnosis by combining medical image processing and fusion with robotic accuracy and repeatability.

- **ROBIOPSY:** is a project funded by the Italian Ministry of Foreign Affairs and International Cooperation (MAECI) to develop a robotic system that could guide a physician during ultra-sound monitored prostate biopsy.
SELECTED PUBLICATIONS (2012-2016)


PEOPLE (2017)

Nicola Bombieri
Assistant Professor
nicola.bombieri@univr.it
+39 045 802 7094

Damiano Carra
Assistant Professor
damiano.carra@univr.it
+39 045 802 7059

Andrea Calanca
Assistant Professor
andrea.calanca@univr.it
+39 045 802 7074

Alessandro Farinelli
Associate Professor
alessandro.farinelli@univr.it
+39 045 802 7842

Paolo Fiorini
Full Professor
paolo.fiorini@univr.it
+39 045 802 7963

Franco Fummi
Full Professor
franco.fummi@univr.it
+39 045 802 7994

Riccardo Muradore
Assistant Professor
riccardo.muradore@univr.it
+39 045 802 7835

Graziano Pravadelli
Associate Professor
graziano.pravadelli@univr.it
+39 045 802 7081

Davide Quaglia
Assistant Professor
davide.quaglia@univr.it
+39 045 802 7811

Tiziano Villa
Full Professor
tiziano.villa@univr.it
+39 045 802 7034

Segreteria: Strada Le Grazie, 15 - 37134 Verona (VR) - ITALY
Tel. +39 045 8027069 / +39 045 8027071
email: segreteria.di@ateneo.univr.it
web: www.di.univr.it