

SAFETY, SECURITY, AND PRIVACY FOR CYBER-PHYSICAL SYSTEMS

Cyber-physical systems (CPSs) are composed of physical and software components that are intertwined for providing smart monitoring and control, eventually including also humans in the loop. CPSs systems are characterized by flexibility and adaptability and can change their behaviour depending on the operating context. Advances in CPS will enable new capabilities and will improve adaptability, scalability, and usability while reducing their vulnerabilities and privacy threats.

Examples of CPS include, but are not limited to, smart grids, systems for smart farming, autonomous transportation, medical implants, process control, wireless sensor networks, robotics and manufacturing.

The complexity and the heterogeneity of CPSs require novel security and privacy technologies for reducing vulnerabilities and improving resilience and robustness against fast-changing attacks and threats. Mission critical CPSs have to include security and privacy protection by design, because of the risks and the huge impact that CPS incidents or failures may have both on its digital and physical components.

Goal of this technical session is to present novel, revolutionary, and multidisciplinary approaches that ensure the security of current and emerging cyber-physical systems, with special focus on threats and vulnerabilities that depend on the different fields.

The research goals of this technical session lay at the confluence of cybersecurity, privacy, and cyber-physical systems, with special focus on security and privacy issues that are due to the combination and coordination between physical and computational elements. The technical session will promote research and reflect the most recent advances on security and privacy in cyber physical systems. Topics of interest include, but are not limited to:

- Attack mitigation in CPS;
- Authentication and access control for CPS;
- Availability, recovery, and auditing for CPS;
- Data protection in CPS;
- Intrusion detection in CPS;
- Key management for CPS;
- Security and privacy for specific CPSs (e.g., EV charging systems, Smart grids, ITSs);
- Security and privacy of the blockchain for CPSs and IoT;
- Security protocols for CPS;
- Threat models for CPS.

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Short Curriculum Vitae

Pierluigi Gallo is an Assistant Professor at the University of Palermo since November 2010. He graduated with distinction in Electronic Engineering in July 2002 and received his PhD in 2015. He worked at CRES (Electronic Research Center in Sicily) until 2009. Since he joined the University of Palermo, he has lectured courses of Application Services over the Internet, Cybersecurity and Signal Theory. His research activity is focused on wireless networks at the MAC layer and 802.11 extensions, localization based on the time of arrival and cross layer solutions. He recently started working on security aspects, focusing on the blockchain and its applications in smart grids, tracing and e-commerce. P. Gallo has contributed to several national and European research projects: ITEA-POLLENS (2001-2003) on a middleware platform for a programmable router; IST ANEMONE (2006-2008) about IPv6 mobility; IST PANLAB II on the infrastructure implementation for federating testbeds; ICT FLAVIA (2010-2013) on Flexible Architecture for Virtualizable future wireless Internet Access, CREW (2013-2014) on Cognitive Radio Experimentation and software-defined networks. He coordinated the research unit at the DEIM Dpt. for the “Smart health 2.0” national project, which is focused on e-health and cloud computing applications. He is currently contributing to the WISHFUL EU project on radio and network control of wireless software and hardware platforms.

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Short Curriculum Vitae

Sara Foresti is an associate professor at the Dipartimento di Informatica of the Università degli Studi di Milano. Her research interests are in the area of data security and privacy in emerging scenarios. Within this area, she has published more than 90 contributions as papers in international conferences and journals, and chapters in international books. She has been visiting researcher at CSIS, George Mason University, USA. She has authored the book *Preserving Privacy in Data Outsourcing*, Springer, 2011. She has been program co-chair for WISTP 2016, CANS 2016, SPC 2015, STM 2015, WPES 2013, ATC 2013, ESORICS 2012, NSS 2011, and DBSec 2010. She is chair of the IEEE Computer Science Italy Chapter and vice-chair of the IFIP WG11.3 on Data and Applications Security and Privacy. She has served as program committee member of various international conferences. She is a member of the editorial board of *Computers & Security*, *Annals of Telecommunications*, and *IEEE Systems Journal*. She is IEEE senior member.