

1. Speakers



JOSE GEROMEL

Universidade Estadual de Campinas, Brazil



ROBERTO TEMPO

Politecnico di Torino, Italy

In 2010 he has served the IEEE Control Systems Society as President and, during the period 2002-2003, as Vice-President for Conference Activities.



ROMEO ORTEGA

SUPELEC, France



KAMESHWAR POOLLA

University of California Berkeley, USA



IVAN MALLOCCI

Zhejiang University, China



RAJA CHATILA

Directeur de recherche CNRS , France

President- Elect of IEEE Robotics society RAS



ALICIA CASALS

Universitat Politècnica de Catalunya, Spain

research trajectory 1999. From 2007 Prof. Casals is member of the *Institut d'Estudis Catalans*, the Academy of Catalonia.



LUIS ALEJANDRO ZORRILLA

Occidental Oil & Gas Corp, USA



LEE RENFORTH

High Voltage Partial Discharge, Ltda



PAULO KURKA

UniCamp, Brazil.

2. Articles

In this conference, 147 papers were received. Figure 1 shows the distribution of the papers per topic.

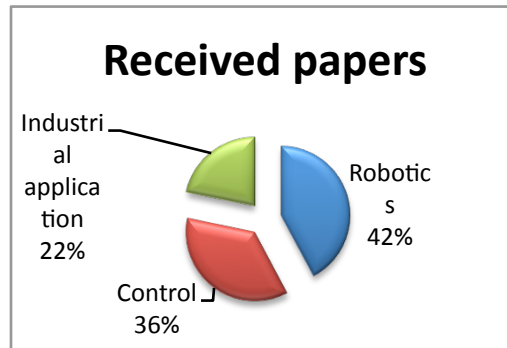


Fig 1. Paper classified according to the topic. Industrial application (32 papers), Control (53 papers) and Robotics (62 papers).

The most part of the paper were accepted (130) and only few of them were rejected (17). Fig 2 shows in a graphical way the acceptance / rejection percentage.

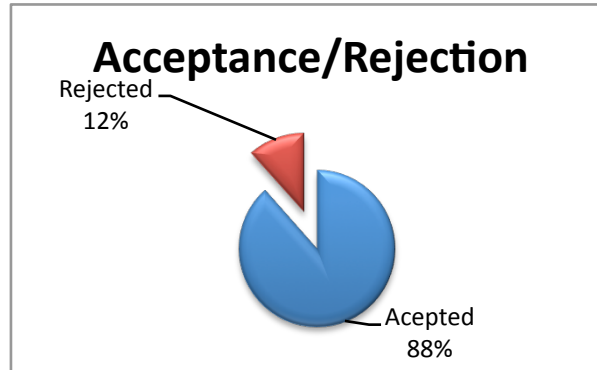


Fig 2. Number of paper accepted and rejected.

The most part of the paper were accepted (130) and only few of them were rejected (17). Fig 2 shows in a graphical way.

Regarding the accepted articles in control, we classified these articles in three types:

- i) English articles: 28 articles were accepted
- ii) Spanish articles: 13 articles were accepted
- iii) Poster articles: 12 articles were accepted

Fig 3. shows the distribution of articles in control topic.

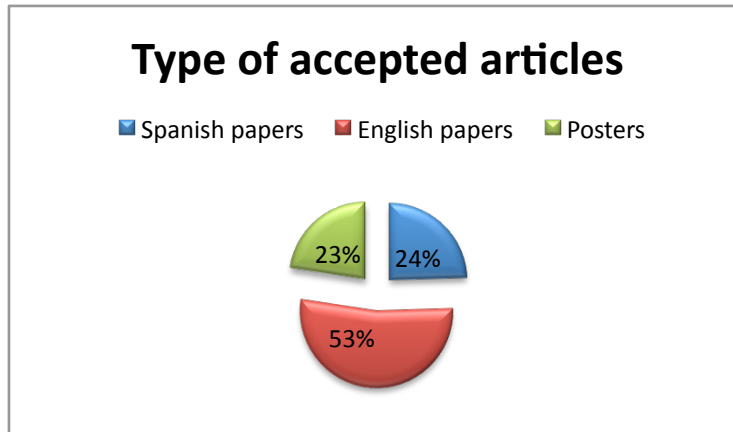


Fig 3. Type of articles accepted in control.

Also a best student article price in control was given to **Daniel Burbano** for the article “**Decreasing quantization effects in a Buck converter controlled by GZAD strategy**”. The price was an IPAD 2.

3. Tutorials

In control, there were two tutorials.

- a) **Title:** Robust control systems: opportunities in the smart grid and applications of polytopic systems

Speaker: Kameshwar Poolla, Ivan Mallocci

Abstract: Part A. The Smart Grid: Distributed Computation and Networked Control Challenges

The Smart Grid is a vision of the future of the electric energy system that will enable integration of renewable energy sources, management and deployment of energy storage, demand response, and distributed generation. Renewable generation, electric vehicles, and flexible distribution network all contribute to an increased fragility of the electric grid.

Part B. Robust Control of Polytopic Systems: An Application to Steering Control in Hot Strip Mills

This tutorial focuses on robust control of polytopic systems through convex optimization

- b) **Title:** 25 Years of Passivity–Based Control: From Energy–Balancing to Power–Shaping

Speaker: Romeo Ortega

Abstract: Energy is one of the fundamental concepts in science and engineering practice, where it is common to view dynamical systems as energy–transformation devices. This perspective is particularly useful in studying complex nonlinear systems by decomposing them into simpler subsystems which, upon interconnection, add up their energies to determine the full system’s

behavior. The action of a controller may be also understood in energy terms as another dynamical system—typically implemented in a computer—interconnected with the process to modify its behavior. The control problem can then be recast as finding a dynamical system and an interconnection pattern such that the overall energy function takes the desired form.

4. Plenaries

Four plenaries in control topic were also programmed:

- a) **Title** Challenges for Network Control System Proliferation

Author: Kameshwar Poolla

Abstract: We will discuss various potential applications of networked control systems ranging from zero energy buildings, to petrochemical refineries, and the Smart power grid. By examining implantation issues across application domains, we will argue that architectures, standards, and legacy system costs are the limiting factors that gate wider adoption of networked control.

- b) **Title:** Some Control Theory Problems in Modern Energy Systems

Author: Romeo Ortega

Abstract: In these talks we discuss the following challenging problems in control theory that arise in recent applications of energy systems and propose some potential solutions.

- c) **Title:** Control Consistency in Switched Linear Systems

Author: Jose Geromel

Abstract: We introduce the concept of consistency for continuous-time switched linear systems having the switching function as a primary control signal to be designed. A switching control strategy is strictly consistent whenever it improves performance compared to the ones of all isolated subsystems.

- d) **Title:** Randomized Algorithms for Control Design: Theory and Applications

Author: Roberto Tempo

Abstract: The starting point of this lecture is a research and educational project having the objective to develop UAV (Unmanned Aerial Vehicle) platforms for environmental monitoring, fire detection and prevention, and also natural disaster recognition. Since the plant is affected by physical and aerodynamic uncertainties, flight dynamic analysis and control system design are critical, and suitable simulation-based techniques need to be developed. To this end, due to the growing interest in probabilistic and randomized methods for control design, we provide a perspective of this fairly recent research area. In particular, we discuss randomized algorithms of sequential type, and study their main properties. Finally, we describe current and future directions regarding applications of these techniques in various areas, including networks and multi-agent systems.