

ICINCO 2008

Final Program and Book of Abstracts

5th International Conference on
Informatics in Control, Automation and Robotics

Funchal, Madeira, Portugal
May 11 – 15, 2008

Co-organized by

INSTICC – Institute for Systems and Technologies of Information, Control and
Communication

and

UMa – Universidade da Madeira

Co-sponsored by

IEEE SMC – IEEE Systems, Man and Cybernetics Society

and

IFAC – International Federation of Automatic Control

In Cooperation with

AAAI – Association for the Advancement of Artificial Intelligence

functionality enables tightly coupled interactions among team members. Rather than focusing on automatic teamwork planning, this paper proposes a complementary and intuitive knowledge-based solution for fast deployment and adaptation of small scale human-robot teams. In addition, the system has been designed in order to provide information about the mission status, contributing this way to the human overall mission awareness problem. A set of empirical results obtained from simulated and real missions demonstrates the capabilities of the system.

Paper 383
9:30 - 11:00
Parallel Session 12 - Robotics and Automation

ICINCO
Buzios II

PROSPECTIVE ROBOTIC TACTILE SENSORS Elastomer-Carbon Nanostructure Composites as Prospective Materials for Flexible Robotic Tactile Sensors

Maris Knite, Gatis Podins, Sanita Zike, Juris Zavickis
*Institute of Technical Physics, Riga Technical University,
Azenes str. 14/24, Riga, Latvia*

Velta Tupureina

*Institute of Polymer Materials, Riga Technical University,
Azenes str. 14/24, Riga, Latvia*

Keywords: Flexible, pressure sensor, polyisoprene, carbon black, CNT.

Abstract: Our recent achievements in the design, processing and studies of physical properties of elastomer – nano-structured carbon composites as prospective compressive strain sensor materials for robotic tactile elements are presented. Composites made of polyisoprene matrix and high-structured carbon black or multi-wall carbon nano-tube filler have been designed and manufactured to develop completely flexible conductive polymer nano-composites for tactile sensing elements. Electrical resistance of the composites as a function of mechanical strain and pressure is studied.

Paper 388
9:30 - 11:00
Parallel Session 12 - Robotics and Automation

ICINCO
Buzios II

DCT DOMAIN VIDEO WATERMARKING Attack Estimation and Capacity Evaluation

O. Dumitru, M. Mitrea and F. Prêteux
*Institut TELECOM / TELECOM & Management SudParis,
ARTEMIS Departement, France*

Keywords: DCT video watermarking, capacity, attack, pdf estimation, Gaussian mixtures.

Abstract: The first difficulty when trying to evaluate with accuracy the video watermarking capacity is the lack of a reliable statistical model for the malicious attacks. The present paper brings into evidence that the attack effects in the DCT domain are stationary and computes the corresponding *pdfs*. In this respect, an in-depth statistical approach is deployed by combining Gaussian mixture estimation with the probability confidence limits. Further on, these *pdfs* are involved in capacity computation. The experimental results are obtained on a corpus of 10 video sequences (about 25 minutes each), with heterogeneous content.

Paper 288
9:30 - 11:00
Parallel Session 12 - Signal Processing, Systems
Modeling and Control

ICINCO
Cipreia II

IDENTIFICATION OF MULTI-DIMENSIONAL SYSTEM BASED ON A NOVEL CRITERION

Yue Zhao, Kueiming Lo

*School of Software, Tsinghua University, Key Lab for ISS,
MOE China, Tsinghua University, Beijing 100084, P. R.
China*

Wook-Hyun Kwon

*School of Electrical Engineering, Seoul National
University, Seoul 151-742, Korea*

Keywords: Multi-dimensional system, identification criterion, ARMAX model, recursive algorithm.

Abstract: Most system recursive identification algorithms are based on the prediction error (PE) criterion. Such a recursive algorithm only considers the present estimation residual error instead of all estimation residuals. It would result in large estimation error when the signal noise disturbs strongly. In this paper, a new identification criterion is proposed. It considers both the errors between the actual outputs and the estimation result and the difference of each estimation error. Under this criterion, a new recursive algorithm MSDCN (Multi-dimensional System Disturbed by Color Noise) is proposed. For multi-dimensional systems, weighting different values on the estimation errors and the difference of each error, MSDCN could both decrease the estimation errors and get smooth prediction curves. Several simulation examples are given to illustrate the method's anti-disturbance performance.