The Brazilian Society of Mechanical Sciences and Engineering

ABCM SYMPOSIUM SERIES IN MECHATRONICS

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Editors
Paulo Eigi Miyagi
Oswaldo Horikawa
Emília Villani

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Preface

The Mechatronics Symposium is the result of the Mechatronics Committee activities of the ABCM - Brazilian Society of Mechanical Science and Engineering. The second issue of the Symposium Series in Mechatronics includes 97 papers selected and presented at the Mechatronics Symposium of the 18th International Congress of Mechanical Engineering (COBEM 2005), held on November 06–11, 2005 in Ouro Preto, MG, Brazil.

The purpose of the Mechatronics Symposium is to gather researchers in order to discuss, disseminate and share relevant results related to research and development activities in the area. The papers included in this volume were submitted to a reviewing and selection process in which they were judged by at least two referees nominated by members of the scientific committee. In addition, they were further evaluated and recommended by the session chairmen during the congress.

A total of 242 papers were initially submitted to the symposium including not only works from Brazilian research institutes but also from overseas institutes and a total of four invited keynote speakers. Since COBEM-1999, when the first Mechatronics Symposium was organized, efforts were conducted so as to stimulate the submission of papers from abroad as well as invite a larger number of experts, giving the Symposium an increasing relevance in the international scenario. The positive evolution has been confirmed with the data from the Mechatronics Symposium in COBEM-1999, COBEM-2001, COBEM-2003 and COBEM-2005.

The review of the Mechatronics Symposium of COBEM2005 involved about 200 researchers and four special sections were organized by Prof. Fabiana R. Leta**,** Prof. Glauco A de P. Caurin**,** Prof. José Reinaldo Silva, and Prof. Vitor F. Romano.

The scope of the second issue of the Symposium Series in Mechatronics comprehends works in the following subjects (but not restricted to): actuators, applied computational mechanics, automatic systems and equipments, CAD/CAE/CAM/CAPP, computer integrated manufacturing, control, discrete and hybrid systems, image processing, manufacturing automation, micro systems & MEMS, nanotechnology, precision machinery, robotics, sensors, signal processing and signal analysis.

The selected papers in this volume are grouped into 12 main subjects:

Section I – Advanced control systems
Section II – Industrial instrumentation
Section III - Robotics
Section IV – Mobile robotics
Section V – Industrial informatics, discrete and hybrid systems
Section VI - Sensors & actuators
Section VII – Nano & MEMS
Section VIII – Intelligence and cooperation in robotics
Section IX – Submarine robotics
Section X – Computer vision
Section XI – Intelligent and distributes manufacturing systems
Section XII – Emerging technologies and AI applications

We are grateful to the referees and the authors. We would like to thank also Mr. Renato Gonçalves de Freitas for providing and organizing the data and files used in this volume.

Paulo Eigi Miyagi
Oswaldo Horikawa
Emília Villani

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