

Preface

This edited volume emerged from the two workshops dedicated to *Optimisation-based Control and Estimation* held in France at CentraleSupélec in November 2013 and November 2014, with participation of academic partners from Bulgaria, France, Italy, Norway, Portugal, Romania, Spain, and Slovakia. The aim of these workshops was to bring together specialists in control theory, applied mathematics, and from selected application domains, notably bio-reactors/industrial bioprocesses, robotic vehicle systems, and power systems, to discuss topics related to the design of advanced model-based strategies relying on optimization for identification, estimation, and control. The research teams invited for these events have been involved in several collaborative projects from whose results most of the contributions presented in this volume were extracted. The authors have been given the freedom to improve and further complement the results presented at the workshop, in order to enrich the book and highlight the relevance of the optimization-based control and estimation. The submitted chapters underwent a two-stage evaluation process involving detailed reviews and updates of the contributions which converged to the collection of chapters composing the present volume.

The support of CAMPUS France (the French national agency for the promotion of higher education, international student services, and international mobility) via bilateral projects is acknowledged here together with the partner institutions in:

- University of Porto—Pessoa project “Advanced control of a fleet of heterogeneous autonomous vehicles” coordinated in Portugal by Prof. Fernando Lobo Pereira
- Bulgarian Academy of Sciences—RILA project “Robust Distributed Model Predictive Control of Medium- and Large-Scale Systems” coordinated in Bulgaria by Assoc. Prof. Alexandra Grancharova
- Norwegian University of Science and Technology, Trondheim—Aurora project “Connections between constrained control design and the theory of positive dynamical systems” coordinated in Norway by Prof. Morten Hovd

- University of Udine—Galileo project “Set theoretic analysis of switched and time delay systems with application to fault tolerant control systems” coordinated in Italy by Prof. Stefano Miani
- University of Craiova—Brâncusi project “Predictive and adaptive control of bioprocesses (modeling, identification and control of interconnected bio-processes)” coordinated in Romania by Prof. Dan Selisteanu
- Slovak University of Technology in Bratislava—Stefanik project “Complexity, Sensitivity and Robustness of explicit predictive control laws” coordinated in Slovakia by Assoc. Prof. Michal Kvasnica
- GEPEA Laboratory Saint-Nazaire, France—with Assoc. Prof. Mariana Titica as principal investigator in the Brâncusi project
- University of Galati, Romania—with Prof. Sergiu Caraman as principal investigator in the Brâncusi project
- Polytechnic University of Catalonia—with Assoc. Prof. Carlos Ocampo Martinez as main collaborator in Spain

It is a great pleasure to thank all of the participants of the workshop for their contributions that have made these events a success. We would like to express our gratitude to our colleagues Cristina Stoica Maniu, Sihem Tebbani, and Pedro Rodriguez Ayerbe, who coordinated the research projects in France and participated skillfully and enthusiastically in the organization of the Workshops. With respect to the local arrangements, the financial support of *Direction de Recherche et Relations Internationales* of CentraleSupélec was an important asset and it is acknowledged here.

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