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Nota di contenuto	Organization; Preface; Contents; 1 Invited Paper: Multimodal Interface for an Intelligent Wheelchair; 1.1 Introduction; 1.2 Human Machine Interaction; 1.2.1 Video based Systems; 1.2.2 Speech Recognition; 1.2.3 Gesture Recognition; 1.2.4 Thought Recognition; 1.2.5 Sip and Puff; 1.3 Multimodal Interfaces; 1.4 IntellWheels Project; 1.4.1 IntellWheels Platform; 1.4.2 IntellWheels Multimodal Interface; 1.4.3 System Implementation; 1.4.4 Actions; 1.4.5 Multimodal Interaction Loop; 1.4.6 Graphical User Interface; 1.5 Experiments and Results; 1.6

Conclusions and Future Work; References

Part II Intelligent Control Systems and Optimization
2 Cognitive Modeling for Automating Learning in Visually-Guided Manipulative Tasks; 2.1 Introduction; 2.2 Cognitive Architectures; 2.3 Visual Servoing; 2.4 The CRR Proposal; 2.5 Case Study; 2.5.1 Task Definition; 2.5.2 Perception; 2.5.3 Visuomotor Control; 2.5.4 Decision Making; 2.6 Results; 2.6.1 System Performance; 2.6.2 Joint Limit Avoidance; 2.6.3 Learning Task; 2.7 Discussion; 2.8 Conclusions; References; 3 Computational

Experience with a Modified Newton Solver for Continuous-Time Algebraic Riccati Equations; 3.1 Introduction

3.2 Basic Theory and Newton's Algorithms
3.2.1 Algorithmic Details; 3.2.2 Computation of the Newton Direction; 3.2.3 Computation of the Newton Step Size; 3.2.4 Convergence Tests and Updating the Current Iterate; 3.3 Numerical Results; 3.3.1 Randomly Generated Systems; 3.3.2 Systems from the COMPLEIB Collection; 3.4 Conclusions;

References; 4 State Feedback Control with ANN Based Load Torque Feedforward for PMSM Fed by 3-Level NPC Inverter with Sinusoidal Output Voltage Waveform; 4.1 Introduction; 4.2 Mathematical Model of an Electromechanical System; 4.2.1 Model of PMSM

4.2.2 Model of Reactance Filter
4.2.3 Model of Inverter; 4.3 Discrete State Feedback Controller; 4.3.1 State-Space Representation of the System; 4.3.2 An Internal Input Model; 4.3.3 Non-stationary Discrete Controller; 4.4 Feedforward Load Torque Compensation; 4.4.1

Feedforward Computation; 4.4.2 Neural Network Approximation; 4.5 Load Torque Observer; 4.6 Control System with Discrete State Feedback

Controller and Load Torque Feedforward; 4.6.1 Model of Proposed Control System; 4.6.2 Simulation Test Results; 4.7 Conclusions; 4.8

Appendix: The Basic Parameters of the Control System; References

5 Adaptive Dynamic Programming-Based Control of an Ankle Joint Prosthesis
5.1 Introduction; 5.2 Dynamical Models of the Gait; 5.2.1

Link-Segment Representation of the Gait; 5.2.2 Ground Reaction Force; 5.2.3 Dynamics of the Prosthetic Ankle Joint During Gait; 5.3 Control

Structure of the Prosthetic Ankle Joint; 5.3.1 Control of the Ankle Joint; 5.3.2 DNDP-Based Control Structure; 5.4 Numerical Study; 5.4.1

Simulation Setup; 5.4.2 Simulation Results; 5.5 Conclusions; References; 6 An Agent Based Layered Decision Process for Vehicle Platoon Control; 6.1 Introduction; 6.2 Definitions

6.2.1 Leaders

Sommario/riassunto

The present book includes a set of selected papers from the tenth "International Conference on Informatics in Control Automation and Robotics" (ICINCO 2013), held in Reykjavík, Iceland, from 29 to 31 July 2013. The conference was organized in four simultaneous tracks: "Intelligent Control Systems and Optimization", "Robotics and Automation", "Signal Processing, Sensors, Systems Modeling and Control" and "Industrial Engineering, Production and Management". The book is based on the same structure. ICINCO 2013 received 255 paper submissions from 50 countries, in all continents. After a double blind paper review performed by the Program Committee only 30% were published and presented orally. A further refinement was made after the conference, based also on the assessment of presentation quality, so that this book includes the extended and revised versions of the very best papers of ICINCO 2013.
