

Preface

Multidisciplinary research has evolved in many innovative areas of science and technological revolution by providing new dimensions as well as challenges in healthcare, robotics, energy, and transportation. Cyber-physical systems (CPS) are no exception to this revolutionary change and many application specific subclasses have already been defined. Examples include aerospace CPS, transportation CPS, healthcare CPS, etc. Cyber-physical systems (CPS) are being developed that are part of a globally networked (with each other as well as with other systems via internet) future world, in which products, equipment, and objects interact with embedded hardware and software. Moreover, when it comes to adding intelligence in CPS by, for example, multiobjective constrained decision algorithms, the conventional CPS merges with the Computational Intelligence for real applications. This has presented some challenging problems, both theoretical and practical, but recently, researchers have witnessed the emergence of some significant results, especially in respect of reducing the computational complexity of high performance computational intelligence algorithms when implemented in low power embedded CPS devices guaranteeing real-time decision support efficiently. This aspect of Computational intelligence for CPS has got little exposure as compared to standalone CPS and CI discussion. This gap is targeted in this volume.

This book is aimed as a ready reference for graduate students and researchers for their knowledge buildup in the application areas of computational intelligence in view of various types of Cyber Physical Systems.

The book has been divided into five parts with respect to CPS application areas. These include wireless sensor and actuator networks (WSANs), Health care and medicine, Robotics, Power and Energy, and industrial applications where we have combined various specialized areas, e.g., logistic systems, aerospace, quality inspection/pre-evaluation, etc.

Finally, we enjoyed going through these impressive chapters which do provide new ideas and scientific research hints, each one within its specific field of study. We wish success for all authors who are keen to perform scientific research in the hope to implement innovative ideas and reliable solutions leading towards a better future for people worldwide.

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