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Guest editorial

This issue is devoted entirely to "Biomechatronics"; the field of research that is concerned with the design and development of intelligent assistive systems for enhancing and restoring human motor functions. This field is truly multidisciplinary in nature, involving the efforts of engineers, scientists and clinicians from areas such as robotics, control engineering, biomedical and biomechanical engineering, man–machine interaction, ergonomics, neuroscience, rehabilitation medicine, orthotics, neurology and physical therapy. Significant progress in this field might be achievable by adopting a system's point of view while completing the design, i.e., by considering relevant design problems across disciplinary borders rather than as a discipline-specific matter. To emphasize and advocate this integrated approach, the term biomechatronics has been introduced recently. It is a variation on the more widely used (and better-known) term "mechatronics", which in the same sense advocates the use of a systems approach during the design of electro-mechanical systems.

In order to obtain a good overview of the state of the art in the area of intelligent assistive systems for human motor control and to establish key issues in biomechatronics, an international workshop took place in April 1999 in Enschede, The Netherlands. This workshop was organized by the Institute for Biomedical Technology (BMTI) of the University of Twente, in association with the Drebbel Institute for Systems Engineering and Mechatronics of the same university and with Roessingh Research and Development b.v. It brought together representatives of all relevant disciplines. Contributions of participants were gathered in the workshop proceedings; from this booklet, internal and external reviewers selected the most significant contributions. The revised and updated versions of these papers are contained in this issue.

We hope that this issue will help to establish biomechatronics as an important field of research that will have an impact on future products for enhancing human motor functions. May the papers contained herein provide you, the reader, with a useful overview of the state of the art and of key issues. And let it stimulate fruitful cooperation between researchers from different disciplines.

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