Modelling, Simulation and Control of Two-Wheeled Vehicles
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DESCRIPTION

Enhanced e-book includes videos

Many books have been written on modelling, simulation and control of four-wheeled vehicles (cars, in particular). However, due to the very specific and different dynamics of two-wheeled vehicles, it is very difficult to reuse previous knowledge gained on cars for two-wheeled vehicles.

*Modelling, Simulation and Control of Two-Wheeled Vehicles* presents all of the unique features of two-wheeled vehicles, comprehensively covering the main methods, tools and approaches to address the modelling, simulation and control design issues. With contributions from leading researchers, this book also offers a perspective on the future trends in the field, outlining the challenges and the industrial and academic development scenarios. Extensive reference to real-world problems and experimental tests is also included throughout.

Key features:

- The first book to cover all aspects of two-wheeled vehicle dynamics and control
- Collates cutting-edge research from leading international researchers in the field
- Covers motorcycle control – a subject gaining more and more attention both from an academic and an industrial viewpoint
• Covers modelling, simulation and control, areas that are integrated in two-wheeled vehicles, and therefore must be considered together in order to gain an insight into this very specific field of research

• Presents analysis of experimental data and reports on the results obtained on instrumented vehicles.

*Modelling, Simulation and Control of Two-Wheeled Vehicles* is a comprehensive reference for those in academia who are interested in the state of the art of two-wheeled vehicles, and is also a useful source of information for industrial practitioners.

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**ABOUT THE AUTHOR**

**Mara Tanelli** was born in Lodi, Italy, in 1978. She is an Assistant Professor of Automatic Control at the Dipartimento di Elettronica, Informazione e Bioingegneria of the Politecnico di Milano, Italy, where she obtained the Laurea degree in Computer Engineering in 2003 and the Ph.D. in Information Engineering in 2007. She also holds a M.Sc. in Computer Science from the University of Illinois at Chicago. Her main research interests focus on control systems design for vehicles, energy management of electric vehicles, control for energy aware IT systems and sliding mode control. She is co-author of more than 100 peer-reviewed scientific publications and 7 patents in the above research aras. She is also co-author of the monograph “Active braking control systems design for vehicles”, published in 2010 by Springer.

**Matteo Corno** was born in Italy in 1980. He received his Master of Science degree in Computer and Electrical Engineering (University of Illinois) and his Ph.D. cum laude degree with a thesis on active stability control of two-wheeled vehicles (Politecnico di Milano) in 2005 and 2009. He is currently an Assistant Professor with the Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Italy. In 2011, his paper “On Optimal Motorcycle Braking” was awarded the best-paper prize for Control Engineering Practice, published in the period 2008-2010. In 2012 and 2013, he co-founded two highly innovative start-ups: E-Novia and Zehus. His current research interests include dynamics and control of vehicles, Lithium-ion battery modelling, estimation and control and modelling and control of human powered electric vehicles. He held research positions at Thales Alenia Space, University of Illinois, Harley Davidson, University of Minnesota, Johannes Kepler University in Linz, and TU Delft.

Born in Manerbio, Italy, in 1968, **Sergio Savarese** holds an MSc in Electrical Engineering and a PhD in Systems and Control Engineering, both from the Politecnico di Milano, and an MSc in Applied Mathematics from Università Cattolica. After receiving the PhD, he was a consultant for McKinsey&Co, Milan Office. He is Full Professor in Automatic Control since 2006. He has been visiting scholar at Lund University, Sweden, University of Twente, The Netherlans, Canberra National University, Australia, Minnesota University at Minneapolis, USA, Johannes Kepler University, Linz, Austria. He is Associate Editor of several international journals and he has been in the International Program Committee of many International Conferences. His main research interests are in the areas of vehicles control, automotive systems, data analysis and modeling, non-linear control, and
industrial control applications. He is the head of the MoVE research group at the Politecnico di Milano, active in many public and industrial projects in all vehicle-related areas.