BOOK REVIEW

Automatic Control of Hydraulic Systems

Michael G. Skarpetis, PhD (Editor) Associate Professor, Core Department, National and Kapodistrian University of Athens, Athens, Greece

The editor of this book has compiled a collection of chapters that provides information for students, engineers, and researchers to encourage the research and development of automatic control for hydraulic systems. The book discusses, among other things, control issues of hydraulic actuators and hydraulic valves that are important in industrial and robotic applications. The issue at hand is extremely significant to modern industries since hydraulic systems are evolving to meet the objectives of Industry 4.0 through the digitization of hydraulic valves and advanced automatic control systems.

This book presents a compelling collection of 4 chapters, each authored by different experts in the field. I found myself fascinated in a thoughtful educational book as I perused its pages. These chapters provided a thorough overview of this rapidly evolving field thanks to the variety of themes and issues they examined.

Every chapter in the book showed evidence of in-depth knowledge of the subject matter, while including straightforward writing that made difficult subjects simple to comprehend. In particular: a) Robust control techniques presented in **Chapter 1**, play a crucial role in enhancing the performance and reliability of hydraulic actuators, especially in industrial applications where uncertainties, external disturbances, and variations in system parameters are affecting the performance of the system. b) The results of the case studies in **Chapter 2**, confirm the capability of the flatness-based control approach to successfully control the nonlinear dynamics of complex systems, highlighting its practical application and effectiveness. c) The proposed optimized fuzzy sliding mode controller method that is suggested in **Chapter 3** provides a strong means of achieving precise positioning and control in hydraulic systems, making it a useful tool for many industrial applications where reliability and accuracy are crucial. d) The combination of neural networks and nonlinear disturbance observers in **Chapter 4**, creates a comprehensive control system capable of effectively controlling industrial hydraulic actuators under varying conditions and uncertainties.

What I found particularly enriching was the diverse range of perspectives offered by the authors. Each of them approached their respective topics from unique angles, shedding light on different aspects of automatic control in hydraulic systems. This approach not only enhanced my understanding of the subject matter but also encouraged me to contemplate the broader implications and applications of this technology.

I was able to examine a diverse range of topics without feeling disconnected because to the book's flawless transition from one chapter to the next. As a result, I had a more comprehensive understanding of how various components in hydraulic control systems interact with one another in a complex way.

Overall, this book is an admirable attempt that effectively conveys the fundamentals of automatic control in hydraulic systems. It is a useful tool for experts, researchers, and amateurs looking for in-depth understanding of this developing topic. Anyone seeking to learn

more about the challenges and opportunities of automatic control of hydraulic systems should read this book, in my opinion.

Dr. Maria Tzamtzi, Professor of Automatic Control Systems
Department of Digital Industry Technologies
National and Kapodistrian University of Athens, Greece