
Optimization in Electrical Engineering

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Preface

There are a number of books available in the market describing electrical engineering optimization concepts. Most are primarily concerned with the mathematical theorems, which might not be interesting for students studying engineering.

The main purpose of this textbook is to provide engineering students with a comprehensive coverage of required fundamentals. Numerous applications and examples are provided to demonstrate how the discussed fundamentals can be utilized in the domain of engineering, with a particular focus on electrical engineering.

It is expected that students, academic researchers, engineers, and institutes in engineering will find this book useful, particularly those in the area of electrical engineering. This book can be used as the main text in courses such as Engineering Optimization, Convex Optimization, Advanced Engineering Mathematics, and Robust Optimization. The book can also be utilized as a supplementary text for university students at both undergraduate and postgraduate levels for courses such as Smart Grids, Communication Networks, Wireless Communication, Automation, and Systems Theory. The main prerequisite of optimization is linear algebra; to satisfy this requirement, the book includes an extensive chapter on this topic.

The authors have over a decade of experience in both academia and industry, specifically with communication networks/systems, automation, robust/intelligent control, and smart/microgrids. The application of such experience to this text creates a rich and detailed resource for students, researchers, and engineers studying/working on electrical engineering.

Most of contributions, outcomes, and insights presented in this book were achieved through long-term teaching and research conducted by the authors and their research groups on optimization problems over the years. It is a pleasure to acknowledge the received supports and awards from the Smart/Micro Grids Research Center (SMGRC) and the University of Kurdistan (UOK) as well as other sources. In particular, the comments from our colleague Dr. S. Fathi Manesh at the UOK are appreciated.

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