

# Preface

The importance of controlling pedestrian flow especially during emergencies is being understood by researchers to be a very important research area. Currently, the use of static emergency routes is not efficient, since during emergencies, the preferred routes might be congested, or worse yet might not even exist. Hence, it is very important to use sensors to measure the current traffic and conditions on the routes and give real-time guidance to pedestrians using feedback control. This book is the first book that provides feedback control design for pedestrian movement control in one and two-dimensional problems using lumped and distributed parameter model settings. There is much more development that is needed in this important work, but the authors hope that this book provides inspiration for other researchers to continue work in this area.

Evacuation can be from a small area, single floor of a building, a entire building, a parking area, or from a much bigger region such as an entire city. The feedback control design for evacuation of pedestrians in small areas falls under the framework presented in this book. Evacuation from bigger regions such as a city requires vehicular traffic control from highways, which can involve modeling of networks using digraphs. Network control for evacuation is not covered in this book.

This book is the outcome of research carried out for two years partially supported by National Science Foundation through grant no. CMS-0428196 with Dr. S. C. Liu as the Program Director. This support is gratefully acknowledged. Any opinion, findings, and conclusions or recommendations expressed in this study are those of the writer and do not necessarily reflect the views of the National Science Foundation. The research was conducted by the four authors

of this book as well as Dr. M. P. Singh from Virginia Tech. Some earlier work also involved development of visualization software (not presented in this book) by Thomas A. Merrell.

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August 2007

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Pedestrian Dynamics

Feedback Control of Crowd Evacuation

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2008, XIV, 246 p., Hardcover

ISBN: 978-3-540-75559-3