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Driver Drowsiness Detection

Systems and Solutions

Springer

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ISSN 2191-5768 ISSN 2191-5776 (electronic)
ISBN 978-3-319-11534-4 ISBN 978-3-319-11535-1 (eBook)
DOI 10.1007/978-3-319-11535-1
Springer Cham Heidelberg New York Dordrecht London

Library of Congress Control Number: 2014949174

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

To my beloved parents whose unconditional love and support know no bounds. – AČ

To Ingrid, for her unfailing support, love, and encouragement. – OM

Preface

This short book presents an overview of driver drowsiness detection systems and associated technologies and available solutions.

There is a substantial amount of evidence that suggests that driver drowsiness plays a significant role in road accidents, claiming the lives of thousands of people every year worldwide. This is a problem that needs to be seriously addressed. If vehicles become equipped with technology capable of detecting signs of driver drowsiness in a timely manner, many potential accidents will be prevented and many lives will be spared as a result.

In this monograph we define drowsiness and quantify its impact and significance, describe several different methods for measuring and detecting driver drowsiness, survey existing solutions, provide guidance on how they can be implemented, and discuss the associated technical challenges.

It is targeted at researchers and practitioners in the fields of engineering and computer science. It caters particularly to readers who want to develop their own methods and systems for driver drowsiness detection using computer vision, image processing, and machine learning techniques to detect driver drowsiness using behavioral cues (e.g., nodding of the head, yawning, or closing of the eyes for prolonged periods of time) and alert the driver accordingly.

We expect that the book will fulfill its goal of serving as a preliminary reference on the subject. Readers who want to deepen their understanding of specific topics will find more than a hundred references to additional sources of related information.

We would like to thank Susan Lagerstrom-Fife and her staff at Springer for their support throughout this project.

Boca Raton, FL, USA
July 2014

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