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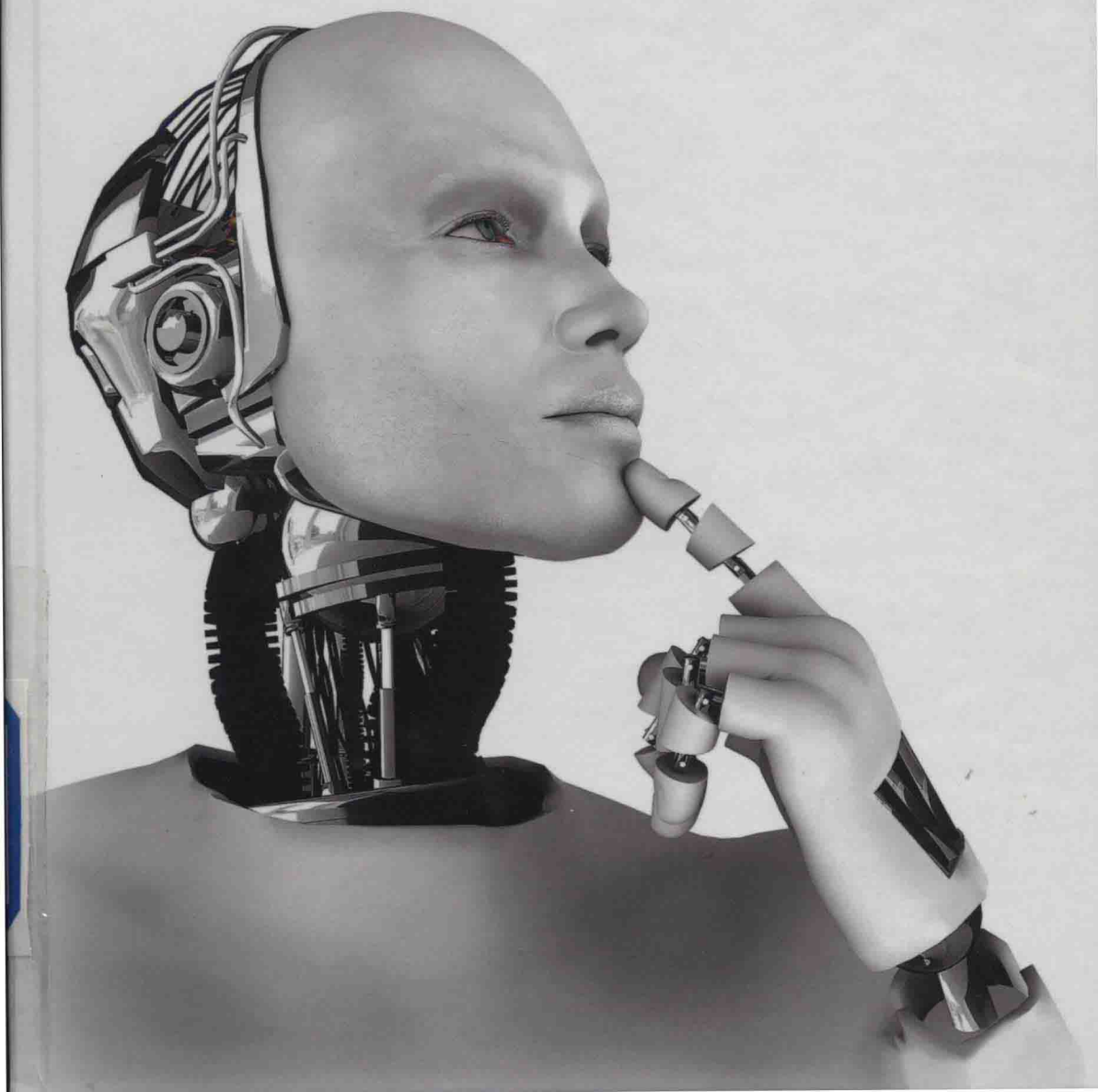
Cognitive Robotics

Edited by

Hooman Samani



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edited by
Hooman Samani
Department of Electrical Engineering
National Taipei University
Taiwan
www.hoomansamani.com

CRC Press
Taylor & Francis Group
Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an **informa** business

Cover illustrations reproduced by kind courtesy of Rodney Alexandre Ferreira Rodrigues and Alexandre Nunes Ponezi.

CRC Press
Taylor & Francis Group
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487-2742

Printed on acid-free paper
Version Date: 20150814

International Standard Book Number-13: 978-1-4822-5403-7 (Hardback)

Library of Congress Cataloging-in-Publication Data

Therapeutic medicinal plants from lab to the market / editors: Marta Cristina Teixeira Duarte, Mahendra Rai.
pages cm
Includes bibliographical references and index.
ISBN 978-1-4822-5403-7 (hardcover : alk. paper) 1. Materia medica, Vegetable. 2. Medicinal plants. 3. Botanical drug industry. I. Duarte, Marta Cristina Teixeira, editor. II. Rai, Mahendra, editor.

RS164.T52 2016
615.3'21--dc23 2015028938

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Contributors

Paolo Barattini
Ridgeback SAS
Cuneo, Italy

Na Chen
Department of Industrial Engineering Tsinghua University
Beijing, China

Alex Yu-Hung Chien
Department of Computer Science
National Tsing Hua University
Hsinchu City, Taiwan

Belinda J. Dunstan
Creative Robotics Lab University of New South Wales Art and Design
Sydney, Australia

Bernhard Hommel
Leiden Institute for Brain and Cognition Leiden University
Leiden, Netherlands

George Kachergis
Leiden Institute for Brain and Cognition Leiden University
Leiden, Netherlands

Alexis Karkotis
BornAnIdeaLab
London, United Kingdom

Roy de Kleijn
Leiden Institute for Brain and Cognition Leiden University
Leiden, Netherlands

Jeffrey Tzu Kwan Valino Koh
Creative Robotics Lab University of New South Wales Art and Design
Sydney, Australia

Christian Ø. Laursen
Aarhus University
Aarhus, Denmark

Jürgen Leitner
Dalle Molle Institute for AI (IDSIA) and SMRTRobots, Lugano, Switzerland

David Levy
Intelligent Toys Ltd.
London, United Kingdom

Tim R. Merritt
Aarhus School of Architecture
Aarhus, Denmark

Mie Nørgaard
MIE NØRGAARD
Værløse, Denmark

Marianne G. Petersen
Aarhus University
Aarhus, Denmark

Doros Polydorou
University of Hertfordshire
Hatfield, United Kingdom

Majken K. Rasmussen
Aarhus University
Aarhus, Denmark

Pei-Luen Patrick Rau
Department of Industrial
Engineering Tsinghua University
Beijing, China

Von-Wun Soo
Department of Computer Science
National Tsing Hua University
Hsinchu City, Taiwan

Hans Sprong
Philips RoboCup
Eindhoven, Netherlands

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CHAPTER 1

When Robots Do Wrong

David Levy

Intelligent Toys Ltd., London, United Kingdom.

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ALREADY mankind has begun to embrace the "robot society." In 2005 the government of South Korea announced its intention to have a robot in every household by 2020. And the Japanese Robot Association predicts that Next Generation Robots will generate up to $ 65 billion of economic

activity by 2025. Also in Japan efforts have been under way for some time to ensure that, before long, elderly members of the population will routinely have robots to take care of them. Meanwhile, at many universities and other research centres, robots of just about every flavour are a hot topic.

1.1 INTRODUCTION

Clearly robots will soon be assisting us in many different aspects of our lives, becoming our partners in various practical and companionable ways and entertaining us. An early example in the field of entertainment was a ballroom dancer robot that was unveiled in 2005 at the World Expo in Japan. It did not have usable legs but instead moved on three wheels.

Let us consider the following scenario, perhaps ten years from now, when dancing robots do have moveable legs and possess the skills for a variety of dance steps, such as waltz, foxtrot, rumba, ... One evening a young lady named Laura is at a dance, partnering such a robot. The band strikes up with the music for a cha cha cha but performs it so badly that the robot mistakes the music for a tango. So Laura and her robot partner are holding each other but dancing at cross purposes, and very soon they fall over. The robot lands on top of Laura and, being quite heavy, breaks both of her legs. Laura's father is furious, and calls his lawyers, telling them to commence legal proceedings immediately and "throw the book at them."

But at whom should his lawyers throw the book? Should it be the dance hall, or the online store that sold the robot to the dance hall, or the manufacturer of the robot, or the robot's designers, or should it be the independent software house that programmed the robot's tune recognition software, or the band leader, or even the whole band of musicians for playing the cha cha cha so badly?

Some months later the trial opens with all of these as defendants. Expert witnesses are called - experts on everything from robot software to motion sensor engineers to the principals of dance music academies. What do you think would be the result of the trial? I'll tell you - the lawyers do very nicely thank you.

As technology advances, the proliferation of robots and their applications will take place in parallel with increases in their complexity. One of the disadvantages of those increases will be a corresponding increase in the number of robot accidents and wrongdoings. How will legal systems be able to cope with all the resulting court cases? In fact, will they be able to cope? The answer, surely, is "No."

In this chapter, I am going to addresses the questions: What should happen when something goes wrong? Who, or what, is responsible? And above all, how best should society deal with an ever-increasing number of robot accidents. All developed countries will be faced with these problems, and all countries need to adopt legally and ethically sound approaches to finding solutions to them.