

Contents

Part I Robotics Curriculum and Schools

- 1 **Bringing Robotics in Classrooms** 3
Amy Eguchi
- 2 **Systems Thinking Approach to Robotics Curriculum
in Schools** 33
Christina Chalmers and Rod Nason
- 3 **Combatting the War Against Machines: An Innovative
Hands-on Approach to Coding** 59
Jacqui Chetty
- 4 **The Open Academic Robot Kit** 85
Raymond K. Sheh, Amy Eguchi, Haldun Komsuoglu
and Adam Jacoff

Part II Robotics and STEM Education

- 5 **How Have Robots Supported STEM Teaching?** 103
Fabiane Barreto Vavassori Benitti and Newton Spolaôr
- 6 **Robotics Festival and Competitions Designed for
STEM+C Education** 131
ChanJin Chung, Christopher Cartwright and Joe DeRose
- 7 **Meeting Twenty-first Century Robotics and Automation
Workforce Needs in the USA** 171
Aleksandr Sergeyev
- 8 **STEM Education by Exploring Robotics** 195
Francis Tuluri

Part III Robotics, Creativity and STEAM Education

**9 The Creative Nature of Robotics Activity:
Design and Problem Solving** 213
Florence R. Sullivan

**10 Dancing, Drawing, and Dramatic Robots: Integrating
Robotics and the Arts to Teach Foundational STEAM
Concepts to Young Children** 231
Amanda Sullivan, Amanda Strawhacker and Marina Umaschi Bers

Index 261