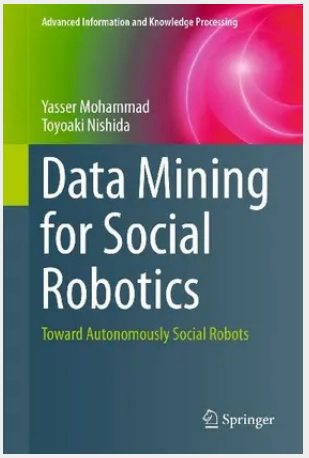
Mohammad / Nishida

Data Mining for Social Robotics

Toward Autonomously Social Robots



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This book explores an approach to social robotics based solely on autonomous unsupervised techniques and positions it within a structured exposition of related research in psychology, neuroscience, HRI, and data mining. The authors present an autonomous and developmental approach that allows the robot to learn interactive behavior by imitating humans using algorithms from time-series analysis and machine learning.

The first part provides a comprehensive and structured introduction to time-series analysis, change point discovery, motif discovery and causality analysis focusing on possible applicability to HRI problems. Detailed explanations of all the algorithms involved are provided with open-source implementations in MATLAB enabling the reader to experiment with them. Imitation and simulation are the key technologies used to attain social behavior autonomously in the proposed approach. Part two gives the reader a wide overview of research in these areas in psychology, and ethology. Based on this background, the authors discuss approaches to endow robots with the ability to autonomously learn how to be social.

Data Mining for Social Robots will be essential reading for graduate students and practitioners interested in social and developmental robotics.

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