

Book Review

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Burgoon, J. K., Magnenat-Thalmann, N., Pantic, M., and Vinciarelli, A. (Eds.). (2017). *Social signal processing*. Cambridge, England: Cambridge University Press. 440 pp. \$61.54 (hardback), ISBN 13: 978-1107161269.

Reviewed by: Helmut Fink, *Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany*; Anja S. Göritz, *Albert-Ludwigs-Universität Freiburg, Freiburg, Germany*.

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This book is a proper scientific anthology, rich in content and carefully edited by four renowned experts. It embraces 29 chapters in four parts, covering all relevant aspects of social signal processing. All chapters are written by active researchers in the respective field. The chapters' contents range from conceptual foundations and theoretical modeling to computer-based detection and technological applications of social signals. Indeed, the book is claimed by the publisher to be “the first book to cover all aspects of the modeling, automated detection, analysis, and synthesis of nonverbal behavior in human–human and human–machine interactions.”

The book is structured as follows: After an introductory chapter by Alessandro Vinciarelli, Part I refers to conceptual models of social signals. The focus of this part is on the identification of principles and laws that govern the use of social signals. Nine contributions from cognitive science, social psychology, evolutionary psychology, and anthropology deal with topics such as the interplay of biological and sociocultural processes to produce and interpret social signals, the perception of affect based on facial and bodily displays, and the analysis of emotional speech. Furthermore, questions of self-presentation, interaction coordination, adaptation, persuasion, and social presence in technology-mediated interaction contexts are treated in these contributions.

Part II is dedicated to machine analysis, that is, automatic detection and interpretation, of social signals. The first chapter of this part, spanning 32 pages, is the longest contribution to this book. It deals with facial expressions and their automatic recognition. What follows are contributions on bodily social signals, personality prediction, computational models of interpersonal synchrony, automatic analysis of social emotions, automatic role recognition, and machine learning methods.

Part III deals with machine synthesis of social signals, that is, automatic generation of artificial social signals for the empowerment of artificial agents. Speech synthesis, body movements generation, affective interfaces, and virtual reality impacts on prosocial behavior are among the topics treated. A chapter on social robotics and the challenges of human–robot interaction completes this part of the book.

Part IV covers some of the most promising applications of social signal processing. Perhaps the most important of them is surveillance (where the “conclusions” seem to have been written originally as an introduction), and another one is the analysis of social phenomena in small groups. Further applications are conflict detection and analysis, multimedia implicit tagging, the detection of developmental disorders in health care, and deception detection. This concludes the range of contributions. Philosophical concerns, such as epistemological and ethical questions, are not within the scope of this book, let alone the political and cultural consequences of the new technological possibilities.

The editors and authors have successfully managed the difficult task of maintaining an adequate level throughout the book, avoiding too superficial accounts on one side as well as too intricate technicalities on the other. Each chapter is complemented by an extensive list of references. The chapters can be read almost independently of one another. Due to its broad scope of perspectives, *Social Signal Processing* may well serve as an accompanying book to a lecture course or as basic literature to a seminar on the subject. At any rate, it meets the requirements of a state-of-the-art review.

All in all, this book can be recommended to students as well as to seriously interested nonexperts, but also to researchers in one of the concerned fields, who look for a comprehensive overview and are open-minded with respect to their neighbor disciplines. We regard this book as useful and stimulating for newcomers and experienced researchers alike. Hence, in our opinion, it should be on stock in every social science library.