BOOK REVIEW

Emotional Intelligence:
A Cybernetic Approach

Reviewed by Jordi Vallverdú, Universitat Autònoma de Barcelona, Catalonia, Spain

Emotional Intelligence: A Cybernetic Approach
Aruna Chakraborty & Amit Konar

326pp.
$269.00
ISBN 978-3540-686-06-4

From time to time one finds a book that easily changes one's ideas about a field, or even better, it provides a catalyst to improve and enhance own ideas to an upper level. Professors Chakraborty and Konar wrote an academic text on emotional intelligence (described as "a new discipline of knowledge, dealing with modelling, recognition and control of human emotions", p. III), but from a rich and comprehensive range of interests: philosophical, psychological, mathematical and computational. The book is organized in 10 chapters. The first one introduces the reader to the philosophical and psychological aspects of emotional intelligence. Second chapter provides an overview of the mathematical foundations required for the understanding of the rest of the book's contents. Chapter 3 analyzes Image Processing techniques, and the next chapter, four, delves into the existing brain imaging data that explain self-regulation of emotions. In Chapter 5 the authors make their first contribution using fuzzy logic to human emotion recognition from facial expressions. In the chapter the authors enter into a fascinating area: formalisms for emotional dynamics, using temporal logic. Following human emotional reasoning, chapter 7 is devoted to the role of multiple emotions and chaos, comparing real brain data and their own model, and minimizing the error function by three algorithms (namely genetic algorithm, particle swarm optimization algorithm and differential evolution algorithm). Chapter 8 provides an overview of EEG signal processing for detection and prediction of emotions, providing a scheme for emotion clustering from bio-potential signals using neural networks. Chapter 9 proposes a method to use the previous schema for emotion modelling, detection and control in human-machine interactive systems and other emotional-inspired affective computing devices. Finally, chapter 10 is a very personal analysis of open-ended research problems in emotional Intelligence as well as a list of materials useful for a better understanding of this young discipline.

If it is true that the book provides a fresh attempt to provide a new mathematical and computational framework to the emotional intelligences design, at the same time offers self-learning tools at the end of each chapter, which include a list of related exercises. The main structure of presenting basic ideas + final summary + exercises + references for each chapter is brilliant and it is didactically well accomplished. The book is at the same time theoretical, introductory and applied. First chapter, which delimitates the boundaries and main characteristics of the emotional intelligence research paradigm, is perhaps overwhelmingly dominated by the ideas of Ben-Ze'ev, although it is true that most important references on the field are present. What is a really good contribution by the authors is the mathematical connection of the existing gap between philosophy and neuro-psychology of emotions, with a blend of experimental results as well of computer simulations that situate the authors in an advanced epistemological position. All the work on emotional dynamics, emotion transitions, flows of the emotional change as well as the dynamics of their stabilization, are of maximum interest. The use of temporal logic applied to this field is really a good idea because provide a solid framework with which to capture the nature of human emotions at the same time that allow a formalization of the whole process. Chapter 10 is a very good attempt to put together different ideas like non-monotonic logic, Bayesian models or fuzzy reasoning trying to show us a new way to deal with the computational understanding of emotional processes.

Perhaps the book's chapter structure is not as consistent as could be expected: for example, Chapter 4 on Brain imaging should be placed after the first chapter, following the transition between the philosophical, psychological and neurological knowledge on human emotions.

As a conclusion, I recommend this book to any person with real interests in emotional modelling, always from an open mind perspective.

Jordi Vallverdú, Ph.D., M.A. is Lecturer Professor at Universitat Autònoma de Barcelona (Catalonia, Spain), where he teaches Philosophy and History of Science and Computing. He holds a Ph.D. in philosophy of science (UAB) and a master in history of sciences (UAB). His research is dedicated to the epistemological, ethical, gender, and educational aspects of Philosophy of Computing and Science. Jordi is Member of the Steering Committee of the European Association for Philosophy & Computing, E-CAP, Member of the Spanish Society of Logic, Methodology and Philosophy of Science, Member of the GEHUCT (Grup d'Estudis Interdisciplinaris sobre Ciència i Tecnologia) research project, Member of the TECNOCOG (Philosophy, Technology and Cognition Research Group), Member of EUCogII, Main researcher of SETE (Synthetic Emotions in Technological Environments), and Expert of the Biosociety Research (European Commission: http://ec.europa.eu/research/biosociety/index_en.htm). His last book (as author as well as editor) is (2009) Handbook Of Research On Synthetic Emotions And Sociable Robotics*, USA: IGI. He is the Editor-in-Chief of the* International Journal of Synthetic Emotions *(http://www.igi-global.com/journals/details.asp?id=33374).*