

NIPS Workshop on Imperfect Decision Makers 2016: Preface

The volume contains 12 papers accepted to and presented at the 4th Workshop on Imperfect Decision Makes held in conjunction with the 30th Annual Conference on Neural Information Processing Systems (NIPS 2016) in Barcelona on December 9, 2016. The workshop continues the series of international meetings on imperfect decision making that are devoted to the attractive interdisciplinary field covering theory and algorithms. The focus of this workshop was on real-world rationality.

The assumption on decision-maker's rationality is central to the prescriptive Bayesian theory of decision making (DM). However, empirical research indicates that this assumption is often violated by real decision makers. This limits the ability of the prescriptive Bayesian theory to describe the real world. One of the reasons that have been proposed for why the assumption of rationality might be violated by real decision makers is the limited cognitive and computational resources of such decision makers. The workshop intended to inspect this core assumption and to consider possible ways to modify or complement it in order to understand and diminish the discrepancy between the established prescriptive theory and real-world DM.

We were very pleased to have welcomed invited talks from the leading experts in the field, Tom Griffiths (University Berkeley), Itzhak Gilboa (HEC Paris), Daniel Braun (Max Planck Institute for Biological Cybernetics), Naftali Tishby (Hebrew University), Timothy Pleskac (Max Planck Institute for Human Development), David H. Wolpert (Santa Fe Institute), Pedro Ortega (DeepMind). The panel discussions on existing research challenges have indicated that scientific discussions will be going far beyond the limited time of the workshop and encourage further collaboration.

We would like to express our sincere gratitude to all the authors, invited speakers, moderators, discussants, programme committee and reviewers for their invaluable contributions to the success of the workshop. We also would like to thank the NIPS 2016 organisers for their help and assistance. The partial support of the project GA16-09848S is acknowledged.

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Adrian Raftery, University of Washington, USA

David Ríos Insua, Instituto de Ciencias Matemáticas, Spain

Alessandro E.P. Villa, Université de Lausanne, Switzerland

Invited Talks

Bounded Optimality and Rational Metareasoning in Human Cognition

TOM GRIFFITHS, University Berkeley, USA

Rationality and the Bayesian Paradigm

ITZHAK GILBOA, HEC Paris, France

Information-Theoretic Bounded Rationality for Learning and Decision-Making

DANIEL BRAUN, Max Planck Institute for Biological Cybernetics, Germany

Principles and Algorithms for Self-Motivated Behaviour

(joint work with S. Tiomkin and D. Polani)

NAFTALI TISHBY, Hebrew University, Israel

The Rational Status of Quantum Probability Theory Applied to Human Decision Making

(joint work with J. R. Busemeyer)

TIMOTHY J. PLESKAC, Max Planck Institute for Human Development, Germany

What the Recent Revolution in Network Coding Tells Us About the Organization of Social Groups (joint work with J. Grana)

DAVID H. WOLPERT, Santa Fe Institute, USA

Agency and Causality in Decision Making

PEDRO ORTEGA, DeepMind, UK

Panel discussions

(IR-)RATIONALITY OF HUMANS?

Moderator: Peter Grünwald, CWI, Netherlands

MODELLING OF RATIONAL DECISION MAKING

Moderator: David H. Wolpert, Santa Fe Institute, USA