

Title: Decisions with multiple simultaneous goals and uncertain causal effects

Author(s): Trigo, Paulo ^[1]; Coelho, Helder ^[2]

Source: Artificial Intelligence in Theory and Practice II **Book Series:** International Federation for Information Processing **Volume:** 276 **Pages:** 13-22 **Published:** 2008

Conference: 20th World Computer Congress **Location:** Milan, Italy **Date:** Sep 07-10, 2008

Sponsor(s): IFIP TC 13

Document Type: Proceedings Paper

Language: English

Abstract: A key aspect of decision-making in a disaster response scenario is the capability to evaluate multiple and simultaneously perceived goals. Current competing approaches to build decision-making agents are either mental-state based as BDI, or founded on decision-theoretic models as MDP. The BDI chooses heuristically among several goals and the MDP searches for a policy to achieve a specific goal. In this paper we develop a preferences model to decide among multiple simultaneous goals. We propose a pattern, which follows a decision-theoretic approach, to evaluate the expected causal effects of the observable and non-observable aspects that inform each decision. We focus on yes-or-no (i.e., pursue or ignore a goal) decisions and illustrate the proposal using the RoboCupRescue simulation environment.

Keywords Plus: Multiple simultaneous goals; Decisions; Uncertain causal effects

Reprint Address: Trigo, P (reprint author) - GulAA, DEETC & LabMAG, Inst Super Engn Lisboa, Lisbon, Portugal.

Addresses:

[1] GulAA, DEETC & LabMAG, Inst Super Engn Lisboa, Lisbon, Portugal

[2] Univ Lisbon, Fac Ciencias, FCUL, DI & LabMAG, Lisbon, Portugal

E-mail Addresses: ptrigo@deetc.isel.pt; hcoelho@di.fc.ul.pt

Publisher: Springer

Publisher Address: 233 Spring Street, New York, NY 10013, USA

ISSN: 1571-5736

ISBN: 978-0-387-09694-0

Citation: TRIGO, Paulo; COELHO, Helder - Decisions with multiple simultaneous goals and uncertain causal effects. Artificial Intelligence in Theory and Practice II. ISSN 1571-5736. ISBN 978-0-387-09694-0. Vol. 276 (2008), p. 13-22.