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Confidence Models of Incomplete Preferences*

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Abstract

This paper introduces a new class of representations for incomplete preferences called confidence models. Confidence models describe decision makers who behave as if they have probabilistic uncertainty over their true preferences, and are only willing to express a binary preference if it is sufficiently likely to hold. Confidence models provide a natural way to connect incomplete preferences with stochastic choice. This connection is characterized by a simple joint condition on an incomplete preference relation and a random choice rule.

Keywords: Confidence models; incomplete preferences; random choice.

1 Introduction

This paper introduces a new class of representations for incomplete preferences called confidence models.¹ A decision maker (DM) with preferences represented by a confidence model has probabilistic uncertainty over her underlying preferences. When comparing two alternatives, the DM computes the probability that one is weakly preferred to the other, and expresses a weak preference if and only if this probability exceeds a fixed threshold. Intuitively, the DM only expresses binary preferences in which she holds sufficient confidence.

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¹It is worth mentioning that the term "confidence model" has been used in a different decision-theoretic context by Chateauneuf and Faro (2009). That paper studies complete preferences over Anscombe-Aumann acts and characterizes a representation that features a fuzzy set of priors.

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