

Precategories and applications to probabilistic automata

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The relaxed notion of category presented in [1] is considered, having in mind the categorial characterization of the mechanisms for combining probabilistic automata, since the composition of the appropriate morphisms is not always defined. The partiality of composition of such morphisms is illustrated at the abstract level of countable probability spaces. Adjunctions, products and weak products are defined in the precategory setting, by applying the definition of adjunction between Ehresmann's neocategories presented in [2]. As an application, these precategory universal constructs are used for relating probabilistic models such as decision trees and accessible probabilistic automata. They are also used for characterizing the basic mechanisms for combining generative probabilistic automata: free aggregation, interconnection and label constraining.

REFERENCES

- [1] P. Mateus, A. Sernadas and C. Sernadas, *Precategories for combining probabilistic automata* (1999), to appear.
- [2] L. Schröder, *Adjunctions between composition graphs*, in preparation.

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