SNAIL

SEMINAR ON ARTIFICIAL INTELLIGENCE AND LOGICS

Polynomial Semantics of Tractable Probabilistic Circuits

Oliver Broadrick,.

PhD student in computer science at University of California, Los Angeles (UCLA)

How do you compactly represent a multivariate probability distribution while retaining the ability to efficiently compute desired probabilities? Probabilistic circuits (PCs) provide a possible answer to this question. PCs compute multilinear polynomials that encode a distribution in a way that still supports tractable marginal inference. However, various polynomial semantics for PCs have been considered in the literature (e.g., network polynomials, likelihood polynomials, generating functions, and Fourier transforms). We discuss these seemingly disparate semantics and show that for distributions over binary random variables they turn out to be equivalent, in the sense that circuits in one semantics can be transformed to any of the others in polynomial time. This means that these models are all tractable on the same class of distributions. We also explore a natural extension of one of these semantics to categorical random variables and establish that inference becomes #P-hard.

Sala B10

Bloco B (IME)

15:00

Válido como AAC

17 Mai