Towards recursion schemata for the probabilistic class PP

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Resumo: Our goal is to explore the potential of *pointers* in recursion-theoretic contexts as a tool to characterize probabilistic classes of computational complexity. In this talk we study PP, the class of decision problems solvable by probabilistic Turing machines in polynomial time with an error probability of less than $\frac{1}{2}$ for all instances.

It is well-known that PP contains NP and that it is contained in $Pspace$; it is open whether these inclusions are proper or not.

In previous work of the first author, the use of recursion schemes with pointers lead to characterizations of NP and $FPspace$, [3, 2]. On this base, our objective consists in extending/restricting the recursion schemes for NP and $FPspace$, respectively, in an appropriate way to capture exactly the power of the class PP. As a result of the *work in progress*, reported here, we get a purely recursion-theoretic characterization of the probabilistic class PP.

The characterization comes in two stages, ST_P and ST_{PP}, where ST_P characterizes the functions computable in polynomial time by deterministic Turing machines [1]. ST_{PP} results then from "strengthening" ST_P with a scheme designed to characterize the decision problems of PP

palavras-chave: computational complexity; recursion schemes with pointers; probabilistic class PP.

Referências

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