Uniform generation of NP-witnesses using an NP-oracle.

Summary: A uniform generation procedure for $NP$ is an algorithm that, given any input in a fixed $NP$-language, outputs a uniformly distributed $NP$-witness for membership of the input in the language. We present a uniform generation procedure for $NP$ that runs in probabilistic polynomial time with an $NP$-oracle. This improves upon results of M. R. Jerrum, L. G. Valiant and V. V. Vazirani [Theor. Comput. Sci. 43, 169-188 (1986; Zbl 0597.68056)], which either require a $\Sigma_P^P$ oracle or obtain only almost uniform generation. Our procedure utilizes ideas originating in the works of M. Sipser (1983), of L. Stockmeyer (1983), and of M. R. Jerrum et al. [loc. cit.].

MSC:

68Q15 Complexity classes (hierarchies, relations among complexity classes, etc.)

References:

Edinburgh.

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