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Abstract

Max Entropy through Natural Interactions †

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The Principe of Maximum Entropy, suggests that when one tries to predict the shape of a distribution, then among all possible distributions available for his choice, he should choose the one that maximizes the entropy of the distribution under some few chosen constraints expressing his limited knowledge of the situation. This principle has deep meaning for human and non-human organisms alike, but it is hard to imagine how it is taken place in natural environments under bounded rationality [1]. The context of the current talk is the way natural cognitive processes may be modeled through entropy and bounded rationality (e.g., [2,3]). More specifically, we would like to present a novel idea [4] describing the way in which the entropy of a predicted distribution increases through a structured process of natural interaction that builds on three principles only: Zipf's [5] principle of least effort, Laplace's principle of indifference, and The Copernican principle, suggesting no observer occupy a special place in the universe. This process will be presented, illustrated and supported by simulations never presented before.

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