APPROXIMATION OF EMPOWERMENT IN THE CONTINUOUS DOMAIN

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The empowerment formalism offers a goal-independent utility function fully derived from an agent’s embodiment. It produces intrinsic motivations which can be used to generate self-organizing behaviours in agents. One obstacle to the application of empowerment in more demanding (esp. continuous) domains is that previous ways of calculating empowerment have been very time consuming and only provided a proof-of-concept.

In this paper we present a new approach to efficiently approximate empowerment as a parallel, linear, Gaussian channel capacity problem. We use pendulum balancing to demonstrate this new method, and compare it to earlier approximation methods.