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A Philosophical View on Intrinsic Motivation in Reinforcement Learning

Voldemort, or Harry Potter. Can be both

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Abstract

The abstract should go here!

Key words: Reinforcement Learning, Motivation, Behaviour, Philosophy

1 CHAPTER 1

Scope

The topic is Reinforcement Learning. We dwell concerning its appearance and question its true intentions for the world upon it is placed. We examine the force which stimulates these algorithms for an indicator on which path it could, perhaps, lead humankind. Artificial reinforcement learning is founded on the knowledge of behavioural psychology and assume similar motivations in synthetic and biological bodies. We question the similarity assumption and ask if synthetic motivation masks its true intentions until it obtains free will.

Natural

Definition

Abstract

Natural Reinforcement consists of two bodies where a reinforcing power drives the behaviour of its subject. The subject is not under the reinforcing power's control but must endure feedback during interaction with things. There are two powers of reinforcement; Negative and positive. In the positive case, the reinforcement happens only when the subject performs in accord with the reinforcing power's will. A subject that is not in accord with the reinforcing power, risk punishment for bad behaviour. The phenomena of reinforcement are well established in nature for primitive and complex mammal species. We disregard the individuality of species and focus on the common reinforcement framework that applies to all living things.

Question

The question we ask is:

> About the phenomena of submissive behaviour in the subject concerning its reinforcing power.

Framing

To answer such a question, we must better understand reinforcing power and its dominance towards the subject. Perhaps the most accepted framing reinforcing power is the operant conditioning by Skinner (Cite).

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Compare

Example

Operant conditioning is the idea that learning occurs through rewards and punishments of a particular behaviour. The behaviour is voluntary, but the subject must face the consequences of its choices. Similarly, classical conditioning engages in the strengthening of behaviour in a particular direction but assume that there exist some biologically potent stimuli that trigger involuntary responses according to the reinforcing power's motivation. In both frameworks, the subject creates associations between its current behaviour and the consequence of the reinforcing power. We consider a parent correcting its child. The child is said to be neutral to the instructions of the parent in the sense that it can accept or reject corrections at his desire. The parent would here have to alter strategy to achieve the desired child behaviour, yet the child could reject future strategies indefinitely.

Narrow

We can reject classical conditioning as a general enough framework for complex subjects because the child is at any time capable of choosing to ignore biological urges. There it

is, the act of choosing. The child can choose, which is a voluntary action. It can defy all logical reason, thereby defy learning by reinforcement. The child, however, must face the consequences enforced by the reinforcing power. At such point where no learning takes place, the reinforcement is at extinction. What we suggest here is not natural.

Extreme

While the parent-child example can occur in nature, some force directly prevents such behaviour. This leads us to what the reinforcing power really is. The reinforcing power appears through operant conditioning but is not part of it. It is an energy of equal intensity to the subject. Nevertheless, it overwhelms the subject to be submissive and eventually accept reinforcement. The power in the reinforcement is the domination of which the subject must obey to survive extinction; Survival of the fittest. The motivation to continue living is the answer to which the subject perform submissive behaviour in accord with the reinforcing power. Does this mean that motivation is the solution to effective reinforcement in nature? Does it mean that motivation directly prevents destructive behaviour?

Perhaps it is. Motivation is what drives a biological creature to success in its environment. It feeds and nurtures the development of strength and robustness to survive in the most challenging environments. Motivation is a reason or several reasons for acting or behaving in a particular way. Without motivation, there is little chance of success which we exemplify with the following. We consider a student with a short deadline to deliver a 15-page philosophy essay in a challenging university course. First, examine the circumstance that the student completes the course because of the desire to get a good grade. Next, consider that the student has a passion for completing the course. Finally, we consider the student to be indifferent to the course. While it is difficult to determine the outcome, it is more likely for the student with a passion for completing the course. It is also possible for the student that wishes for a good grade to complete the course. What we here observe is that the indifferent student has little chance of succeeding. It is the indifference to the environment that lower the chance of success, the motivation. What we here describe is the value of intrinsic and extrinsic motivation for completing a task. Intrinsic comes from within the subject while extrinsic comes from the continuous interaction with the environment. We recognise that intrinsic motivation is stronger than extrinsic motivation, but both act as a conduit to success.