Markov_example_Jeong,wonryeol

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Effect of Exercise policy for muscle growth

Introduction

A student who likes to exercise decided to make a strategy for his lower body muscle growth. There are two exercises. First is squat and second is deadlift. If he Squats, he get guaranteed a low injury rate but his muscle grow slowly. However, If he Deadlift, he has a high probability of injury but his muscle grow fast. He have to calculate optimal exercise strategy for maximum muscle growth with optimal effort. As a result, two actions could be defined:

Problem Formulation

- $State = S = \{1, 2, 3, ...\}$
- Action $A = \{Squat, DeadLift\}$
- Squat's Transition Prob $\{0.9, 0.1\}$
- DeadLift's Transition Prob $\{0.7, 0.3\}$
- $Reward \quad R(Squat_{Success}) = 1.5$, $R(Squat_{Failed} = -1), R(DeadLift_{success}), R(DeadLift_{failed}) = 1$

Use the Markov chain temperamental difference trait to establish a movement strategy.

Squat Figure

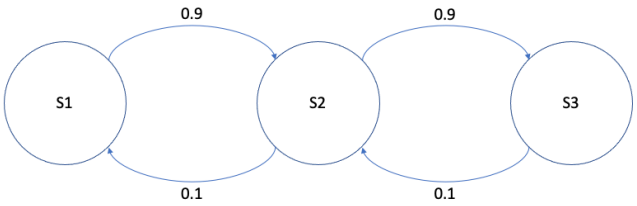

Figure 1: Squat

DeadLift Figure

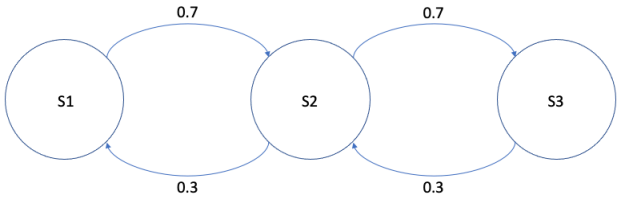

Figure 2: Deadlift