Particle Swarm Optimization as a description of society

Lukas Klingsbo

April 2019

1 Introduction

1. i = individual number
2. $x_i(0)$ = Random starting position of individual i in the multidimensional space
3. $v_i(0)$ = Every indiviual has no starting velocity
4. $v_i(t+1)$ = The next velocity from time t
5. $x_i(t+1)$ = The next position from time t Simply the current position with the velocity for time t+1 added

Thoughts, should random part have random weight too? Explains how an individual will be randomly much affected by events And C_r might explain how much its priviledge or lack of it will make the random events to have different impact on you.

$$x_i(0) \in \mathbb{R}^n$$

$$v_i(0) = \vec{0}$$

$$v_i(t+1) = \begin{cases} c_c r_1 [p_{best} - x_i(t)] + \\ \omega v_i(t) + c_s r_2 [g_{best} - x_i(t)] + \\ c_r r_3 [i_{rand} - x_i(t)] \end{cases}$$

$$x_i(t+1) = x_i(t) + v_i(t+1)$$