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Ulyanov

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(54) **SYSTEM AND METHOD FOR CONTROL USING QUANTUM SOFT COMPUTING**

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(57) **ABSTRACT**

A methodology and an algorithm for programming a quantum logic algorithm is described. In one embodiment, an algorithm for generating a quantum gate is described. The quantum gate describes the evolution of the quantum computing algorithm and is used to implement a desired quantum algorithm. In one embodiment, the quantum gate is used in a quantum search algorithm to search a number of local solution spaces to find a global solution to be used in a control system to control a plant. In one embodiment, the quantum search algorithm is an iterative algorithm and an entropy-based basis for stopping the iterations is described. In one embodiment, the quantum search algorithm is used to improve a genetic optimizer in the control system.

45 Claims, 48 Drawing Sheets