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Deep machine learning and pattern/face recognition based on quantum neural networks and quantum genetic algorithm

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In report a new approach for deep machine learning and pattern recognition based on quantum neural network and quantum genetic algorithm is described. The structure of quantum fuzzy neural network is considered. Examples of pattern recognition is described. The method of global optimization in control problems is considered on example of quantum genetic algorithm. The structure on quantum genetic algorithm is introduced. Information technology of intelligent control system design based on quantum soft computing is presented. Example of quantum genetic algorithm application for control of nonlinear "carte-pole"system is described. Application of modified Grover quantum search algorithm in unstructured big database is discussed. Quantum soft computing optimizer of knowledge bases is presented. This report discusses the development of robust intelligent control systems. Special attention is paid to the algorithm of quantum fuzzy inference, in particular to the stage of determining the type and form of quantum correlation. Automating the choice of the type of quantum correlation can be done with the help of a quantum genetic algorithm whose analysis and choice are considered in this report.

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