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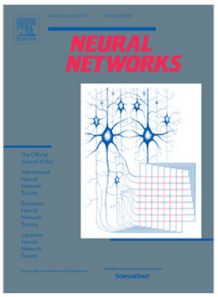

Quantum associative memory with linear and non-linear algorithms for the diagnosis of some tropical diseases

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Abstract: This paper presents the QAMDiagnos, a model of Quantum Associative Memory (QAM) that can be a helpful tool for medical staff without experience or laboratory facilities, for the diagnosis of four tropical diseases (malaria, typhoid fever, yellow fever and dengue) which have several similar signs and symptoms. The memory can distinguish a single infection from a polyinfection. Our model is a combination of the improved versions of the original linear quantum retrieving algorithm proposed by Ventura and the non-linear quantum search algorithm of Abrams and Lloyd. From the given simulation results, it appears that the efficiency of recognition is good when particular signs and symptoms of a disease are inserted given that the linear algorithm is the main algorithm. The non-linear algorithm helps confirm or correct the diagnosis or give some advice to the medical staff for the treatment. So, our QAMDiagnos that has a friendly graphical user interface for desktop and smart-phone is a sensitive and a low-cost diagnostic tool that enables rapid and accurate diagnosis of four tropical diseases.

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