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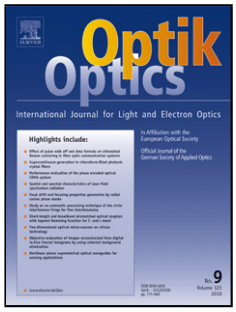

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PII: S0030-4026(16)31460-7
DOI: http://dx.doi.org/doi:10.1016/j.ijleo.2016.11.124
Reference: IJLEO 58540

To appear in:

Received date: 2-10-2016
Accepted date: 24-11-2016

Please cite this article as: Mosayeb Naseri, Shahrokh Heidari, Reza gheibi, Li-Hua Gong, Mehrdad Ahmadzadeh Rajii, Amir Sadri, A Novel Quantum Binary Images Thinning Algorithm: A Quantum Version of The Hilditch's Algorithm, *<![CDATA[Optik - International Journal for Light and Electron Optics]]>* (2016), http://dx.doi.org/10.1016/j.ijleo.2016.11.124

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A Novel Quantum Binary Images Thinning Algorithm: A Quantum Version of The Hilditch's Algorithm

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Abstract

Skeletonisation or thinning process is an important step in pre-processing phase and it is crucial process for many applications such as pattern recognition, data compression/storage, OCR and etc. In classical information, there are several algorithms proposed for the aim of image skeletonisation or thinning. One of the widely used algorithm for this purpose is Hilditch's Algorithm. In this paper a novel quantum version of Hilditch's algorithm for quantum image thinning is proposed where the Novel Enhanced Quantum Representation of digital images (NEQR model) is employed for representation of the quantum images. The proposed algorithm can be considered as the first quantum image thinning algorithm used in any schemes proposed in the growing field of quantum image processing.

Keywords: `Image Processing, NEQR, Quantum Binary Image, Hilditch's Algorithm, Thinning`

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