بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قَـــسم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of 15 – 25c and relative humidity 20-40 %

بعض الـوثــائق

الأصلية تالفــة

بالرسالة صفحات

لم ترد بالأصـــل

A Parallel Lossless Binary Image Compression Technique Using Bayesian Networks

by

Radwa Moustafa Saber Aboudina

A Thesis Submitted to the
Faculty of Engineering at Cairo University
In Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
COMPUTER ENGINEERING

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Under the Supervision of

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Computer Engineering
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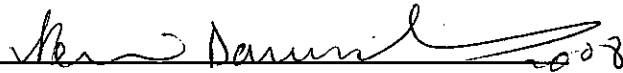in
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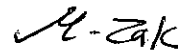
Approved by the
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Abstract

Lossless compression of binary images has been an important scope of interest for many years. Being lossless is crucial in many applications such as geophysics, telemetry, nondestructive evaluation and medical imaging, where huge amounts of data must be stored, and accurately recovered preserving each fine detail in the original data. Reaching the maximum compression in minimum time has always been the goal of researchers in this field. As well as efficiency and speed, maintaining security has also been a significant issue that is to be achieved in the compression process. In this work the concept of Bayesian networks is proposed to be used as a probabilistic model, making it possible to exploit the two dimensional relationship between adjacent pixels. Due to the high time and computation complexity of Bayesian networks, parallel processing is used to achieve maximum compression with minimum time consumption. A distributed file storing system rather than a central one is also employed to achieve security of the stored compressed images, making it impossible to recover the original file unless it is authorized to access the whole parallel system. The experimental results show that the proposed approach achieves very promising results compared to other binary compression techniques. The system outperformed other techniques in some cases and achieved comparable results in the rest of the cases.

Acknowledgments

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