Collection & Conserving using JPEG2000

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Abstract:

This is also described. chapter gives a brief overview about the usage of JPEG2000 in two cultural heritage applications. At the time of writing, JPEG2000 as a future safe and longterm ISO standard is well accepted by cultural heritage organizations.

JPEG2000/Part1 is well suited for compression of photorealistic images.

Alinari, Italy, is the oldest photo stock agency in the world. In a common project, Alinari and LuraTech tested JPEG2000/Part1 on a set of images.

JPEG2000/Part6 enables an optimal compression for scanned historic documents. The German Resistance Memorial Centre is using LuraDocument for quite a while and the usage in this interesting application

Alinari images and JPEG2000/Part1

The JPEG2000/Part1 software for image compression has been tested on a set of selected images owned by Alinari I.D.E.A. S.p.a (Italy). The software produces very good results in all cases.

There are several reasons why a digital archive would want to explore and test this new image file format. And the criteria for choosing a new format must address the needs of both users and the archive database. The users need to be able to quickly look for images . They also need images with different resolutions and qualities (some, could be of a very high resolution, i.e. 2000x3000 pixels, which could have sizes of 50-90MB). For the archive database, there are the storage and management requirements.

Moreover, new environments (mobile phones, MMS technology, 3G, …) and new communication applications, require a revision of the archiving file format. The images are then expected to have metadata and IPR information encapsulated in the same file. Other requirements are: guaranteed security and protection from un-authorized usage of the images as well as the ability to specify the colour space of an image with an ICC-profile.

LuraWave.jp2 compression is a new format fully-compliant with JPEG2000/Part1 (International ISO standard). It analyses the complete image to enable optimal compression by using a Discrete Wavelet Transformation algorithm instead of the Discrete Cosine Transformation that generated visible block artefacts. Even at high compression rates, JPEG2000/Part1 compresses images making them appear smooth but without any significant loss of information. With low compression rates, up to around 1:10, JPEG2000/Part1 suppresses image details that are not perceptible to the human eye. By removing the only "visual irrelevances", the image compression is practically lossless.

In conclusion, JPEG2000/Part1 has successfully met most of the digital archive requirements: from improving compression quality (excellent), to assuring security and enabling colour management plus integrating metadata. Alinari can already see many application areas for the software in its database.

The "Gedenkstätte Deutscher Widerstand" (GDW: The German Resistance Memorial Center) is using software by LuraTech to digitalize its comprehensive collection of photography and documents

A multimedia information system has been developed over the past few years for the Gedenkstätte Deutscher Widerstand (GDW - The German Resistance Memorial Center). This innovative system will one day encompass GDW's complete range of stored data. LuraDocument (= JPEG2000/Part6) has been successfully integrated into the digital archiving and knowledge management system developed by minuskel, known as DARWIM. With its optimal compression results, the system is a key factor in the successful realization of this ambitious project.

To date, eight external terminals have been set up at the GDW for public use, through which individual documents and images from the Resistance Information System can be conveniently perused. Since autumn 2002, visitors to the Plötzensee Memorial Center have also had access to a Resistance Information System-based application. Here, one public terminal has been set up. The digital information system "Plötzensee Book of the Dead" contains existing biographies, documents and portraits of the 2,891 prisoners murdered at the Plötzensee prison, Berlin. As soon as new information is entered into the Resistance Information System, it becomes available in Plötzensee as well through a convenient update function.

GDW employees have also been able to store audio files in the system since the beginning of the summer, which in turn can be played by visitors.

The successful use of JPEG2000/Part6 software in the Resistance Information System / DARWIM database for the German Resistance Memorial Center is a forward-looking solution for integrating a powerful image and document compression application into a complex knowledge management system. It represents an outstanding resource for companies, public foundations and private institutions for the archiving and contextual cross-linking of larger volumes of image and text data.