WEBCAM download:
Latest version of the WEBCAM framework is available from the website:
http://svc.group.shef.ac.uk/webcam.html

Licensing:
WEBCAM is free for non-commercial use. Commercial use of WEBCAM is available through a Non-Exclusive Software License Agreement. For details please contact us.

Publications:
People who are publishing scientific results obtained with the help of WEBCAM are requested to cite the following papers:

1. D. Bhowmik and C. Abhayaratne, *A framework for evaluating wavelet based watermarking for scalable coded digital item adaptation attacks*, in Proc. Wavelet Applications in Industrial Processing VI , SPIE Electronic Imaging 2009, vol. 7248, San Jose, CA, USA, January 18-22 2009, pp. 72480M (10 pages).

2. D. Bhowmik and C. Abhayaratne, *Evaluation of Watermark Robustness to JPEG2000 Based Content Adaptation Attacks.* (to appear) in Proc. 5th International Conference on Visual Information Engineering (VIE '08), Xian, China, Jul. 2008.

Acknowledgements:

1. This project is funded by BP-EPSRC Dorothy Hodgkin Post Graduate Award.

EPSRC Engineering and Physical Sciences Research Council

2. Part of the content adaptation module consists of executable files from Kakadu JPEG2000 implementation.

Contact:

Deepayan Bhowmik
d.bhowmik@sheffield.ac.uk
Ph: (+44) 1142225188

Dr. Charith Abhayaratne
c.abhayaratne@sheffield.ac.uk
Ph: (+44) 114 222 5893

Scalable Coding and Applications Research
Vision and Information Engineering Lab

Dept. of Electronic and Electrical Engineering
The University of Sheffield
Sheffield S1 3JD
United Kingdom

http://svc.group.shef.ac.uk/webcam.html

WEBCAM
Watermark Evaluation Bench for Content Adaptation Modes

The University Of Sheffield.

Electronic & Electrical Engineering

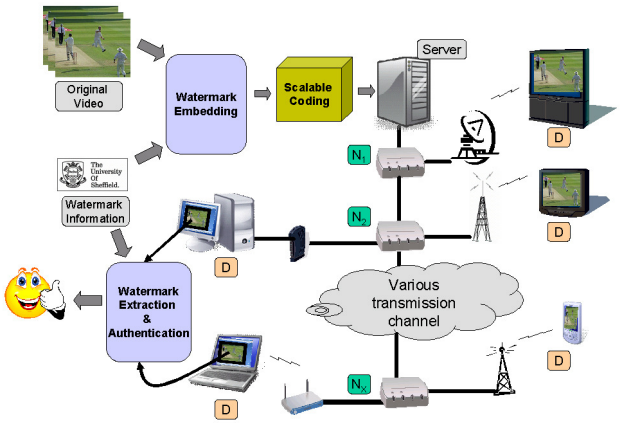
WEBCAM

Watermarking Evaluation Bench for Content Adaptation Modes

http://svc.group.shef.ac.uk/webcam.html

What is WEBCAM?

WEBCAM is a generalised modular flexible framework to evaluate image and video watermarking schemes in terms of embedding performance and robustness against scalable coded content adaptation such as JPEG2000 and H.264 Scalable Video Coding (SVC) extension.



Why WEBCAM?

Current version of WEBCAM consists of wavelet based image watermarking and JPEG2000 based content adaptation attacks. It provides:

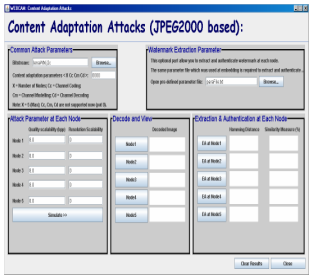
- a controlled experimental environment for wavelet based image watermarking schemes under single common framework.
- a tool to identify and build new watermarking schemes by choosing various modules and parameters from WEBCAM.
- a model to emulate JPEG2000 based content adaptation and use them on evaluation of watermark robustness.

How does it look like?

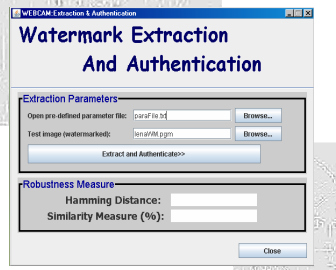
Main menu:

Embedding:

Content Adaptation:



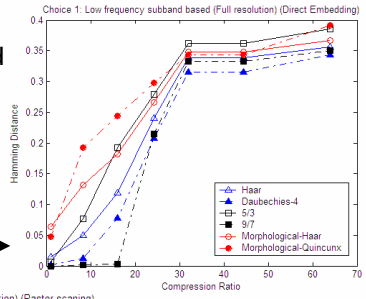
Extraction & Authentication:

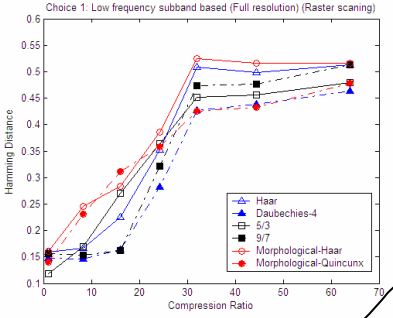


Example Results:

The robustness performance measured with Hamming distance for quality scalability content adaptation.

Direct modification algorithm →





← Quantisation based algorithm

Features:

Embedding:

- Choice of wavelet kernel (orthogonal, bi-orthogonal and non-linear).
- Selection of single or combination of subbands to embed watermark.
- Choice of thresholding methods to select the coefficients.
- Choice of popular wavelet based watermarking algorithms.
- Quick input parameter configuration using single parameter file.

Content Adaptation:

- Simulation of JPEG2000 based content adaptation
- Any quality and resolution scaling option.
- New bit stream created and kept at each node for decoding and watermark extraction.
- Decode and view scaled image at each node.

Extraction & Authentication:

- Choice of authentication matrices (Hamming distance, similarity measure or correlation).

Comments & Future Release:

- WEBCAM facilitates to build and compare wavelet based watermarking schemes in a single controlled environment.
- A learning tool for wavelet based watermarking schemes.
- Future releases will include evaluation of video watermarking against scalable coded video content adaptation.