# Efficient image and video compression, for surveillance and streaming media applications.

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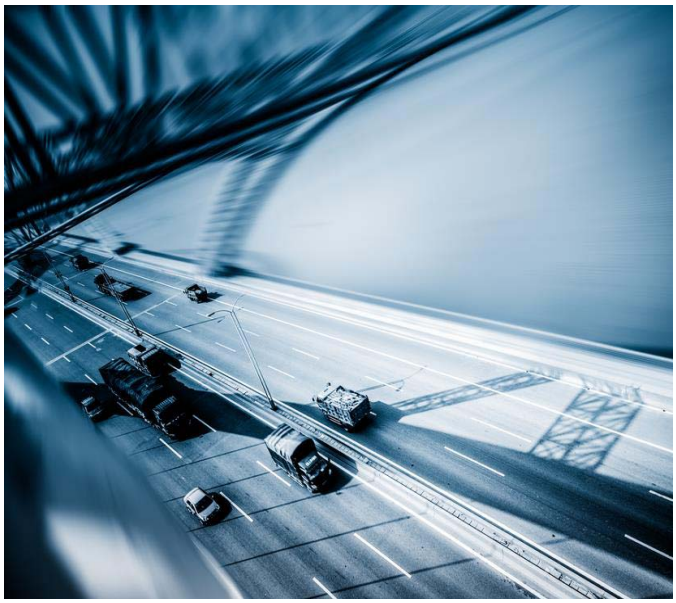
## Using Meta Data information representing objects motion images and video can be efficiently compressed to maximise bandwidth use while maintaining quality

### The Technology

Efficient use of bandwidth in ever increasingly detailed video streams is a key driver for compression of video. The technology developed at UNSW is based on the JSIV (Jpeg2000 scalable interactive video) system and uses motion meta data to ensure a highly efficient compression focussing detail on objects of interest. This combination system allows for more efficient bandwidth use and image quality maintenance upon video retrieval and scaling.

The technology can be adapted in areas where remote interactive browsing is useful. This may include: streaming, conferencing, surveillance and broadcasting. Currently researchers have developed a demonstration software prototype of the system which demonstrates JSIV with explicit motion. This may be used to benchmark the capabilities of the technique or could be developed further into a product.



### Key Benefits

- Application of motion and disparity data in interactive video
- Use of a variety of metadata to allow client reconstruction of images with more efficient bandwidth usage and minimal quality loss
- Efficient transmission/use of wide field surveillance imagery with emphasis of detail on areas of motion.

### Applications

- Surveillance and security monitoring services/technologies
- military/security video streaming applications
- Online Video streaming services

### The Opportunity

NewSouth Innovations is currently looking for partners to licence the technologies developed by Prof David Taubman, the inventor of the successful Kakadu Software JPEG2000 compression SDK. Due to the similarities across the portfolio these technologies are available as a group or individually for use in potential licensee's commercial products.

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# Technologies for Image and Video Compression at UNSW

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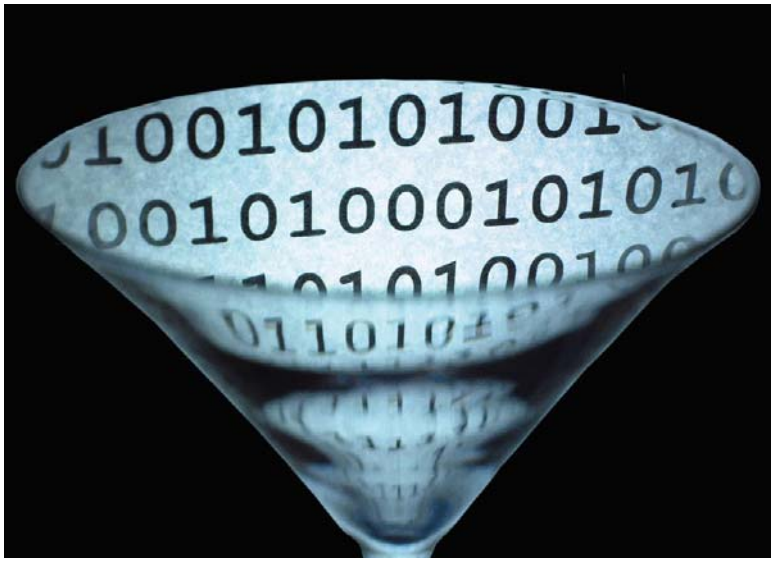

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### Efficient Scalable compression of spatial data sets, images and video.

A method of representing geometric information in image compression.
The technique can prioritize and estimate information for greater performance

### Efficient image and video compression, for surveillance and streaming media applications.

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### Protection for scalable data transmissions over lossy networks.

A system for optimising the transmission efficiency and reliability of scalable data sent over unreliable packet networks.

### A Motion sensitive video transformation. Compresses video data once, but use in many ways.

A method of compressing scalable video, based on motion compensated lifting. This allows FPS, bit depth and resolution selection, suitable for systems where the bandwidth is not guaranteed

### Highly interactive remote browsing of video for network streaming.

A technique to generate more efficient scalable video streams compared to other commonly used methods.

### Visual optimization and compression to maximize the efficient storage of media.

A method for achieving the highly efficient compression of images in a lossy manner while maintaining a pre-set standard of visual quality.


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# About the Inventor and UNSW

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## Professor David Taubman

Prof David Taubman, A leader in the field of image and video compression techniques, has developed a suite of patented methodologies and software in this field. The suite provides various technologies to improve video and image compression and manipulation to suit specific market needs.

Prof Taubman is with the School of Electrical Engineering and Telecommunications, at the University of New South Wales, where he heads the Telecommunications Research Group and is also Director of Research. Before joining UNSW at the end of 1998, he spent 4 years at Hewlett-Packard's research laboratories in Palo Alto, California. He received the B.S. and B.E. (Electrical) degrees in 1986 and 1988 from the University of Sydney, Australia, and the M.S. and Ph.D. degrees in 1992 and 1994 from the University of California at Berkeley. He has contributed extensively to the JPEG2000 standard for image compression and the JPIP standard for interactive image communication and continues to contribute to these technologies. He is author, with Michael Marcellin, of the book "JPEG2000: Image compression fundamentals, standards and practice" and author of the popular Kakadu software for JPEG2000 developers. He is recipient of two IEEE Best Paper awards: for the 1996 paper, "A Common Framework for Rate and Distortion Based Scaling of Highly Scalable Compressed Video;" and for the 2000 paper, "High Performance Scalable Image Compression with EBCOT". Amongst many featured speaking engagements, Professor Taubman was Plenary Speaker at ICIP2006 (the IEEE's flagship Image Processing conference). He also gave a featured 1 hour research overview of Scalable Video Coding at ICME2012 (the second most significant IEEE conference in the area of Image and Multimedia Processing). His research interests include scalable image and video compression, robust communication of scalable media over unreliable channels, interactive multimedia communication, perceptual modelling of video and statistical inverse problems in imaging.


**www.KakaduSoftware.com**

The Kakadu Software, developed by UNSW, is a comprehensive, heavily optimized, fully compliant software toolkit for JPEG2000 developers.
Originally developed by Prof Taubman in 2001 the software now has licenced users all over the world. Licensees range from large multinationals and governments to small start-ups and academic institutions including Major libraries and universities. The software is used across a number of industries from military, medical imaging and satellites to web application development and digital cinema.