

## Paper Analyses

**Paper:** "MPEG: A video Compression Standard for Multimedia Applications"

This paper talks about standardization of video compression which would have a great impact on multimedia-related applications. MPEG, Moving Picture Expert's Group, did a really good job. During the two years, they went from 15 to 150 participants. It is an old paper which one could tell by several elements in the paper (e.g., they are talking about ISDN and CD-ROM). It is, however, a good paper. It is very thorough in its evaluations, got good explanations where needed, and examples are also given in some cases. They did well on the motivation part by making the reader aware that this would be a big contribution in its field.

As the paper goes on, they discuss different approaches, techniques, features that may be/are needed. Just to mention some: asymmetric vs symmetric applications, random access, and fast forward/reverse searches. It seems like they thought a lot about all the properties that were of interest. Most of the properties discussed are well covered, but there are some that are a bit thin. However, on an overall basis, they are thorough and provide good explanations and examples.

I think it was wise to let the manufacturers has some freedom at the encoder, such as quality factors: motion estimation, adaptive quantization and rate control. A rather disappointing side of the MPEG algorithm, is that it is not necessarily optimal at higher bit rates. This was probably a big challenge, and as they mentioned, the MPEG committee had already started to look into this.

The tables provided give a good overview, and are great for quick references. The ratio between text and tables/illustrations, is fair and the reader gets a better idea of what is happening. The authors say: "... are likely to open the way to a wealth of new applications loosely labeled 'multimedia' ", which we certainly can agree on today. The use of multimedia has been enormous, and only continues to grow. The demand is getting higher and higher. The paper also mentions a new phase where they study video compression with higher bit rates.

## Paper Analyses

**Paper:** "Overview of the Scalable Video Coding Extension of the H.264/AVC Standard"

SVC enhances transmission and storage applications. It has huge improvements in coding efficiency. One of the features, is that it allows for decoding of partial bit streams, as well as the transmission of these. This will help applications that have lower temporal, spatial resolutions or reduced fidelity. It is able to do all this, and still have a high reconstruction quality. Surveillance applications would benefit from SVC because they need to be stored and archived, and the video sources need to be viewed on several devices. An example is that after some expiration time, it would lower the quality by deleting high-quality parts of a bit stream.

In general, the paper has a nice setup. The introduction- and history-section provide good background information. Figure 5 really shows us that it is an improvement.

I do not think this paper did as well as the other paper regarding the motivation for this paper. A lot of explanations are present, and provide good information to the reader. They talk about different scalabilities: temporal, spatial and SNR scalability. The paper gives various tools for reducing loss in coding efficiency relative to single-layer coding. One of the major improvements is done in the inter-layer prediction of motion. Other improvements include single motion compensation loop decoding, the concept of key pictures, and hierarchical prediction structures.