

## A NEW APPROACH ON ERROR RESILIENT VIDEO CODING FOR LIVE VIDEO COMMUNICATION

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*ABSTRACT.* Though diverse error resilience tools have been developed, live video communication still poses a big challenge in reality because of the residual errors. SEC (Second Error Control) is introduced for error resilience in this work and the simulation shows a significant improvement over the current error resilient tools in the MPEG-4 standard in both random residual errors and bursty residual errors.

**Keywords:** Error correction coding, Error resilience, MPEG-4, Video coding

1. **Introduction.** It is unavoidable that a video bitstream delivered to a video decoder through a communication channel is left with some residual errors, as the error control mechanism in a data link layer of a telecommunication network cannot eliminate all the error bits introduced by the transmission channel. One inherent problem with video communication is that a video bitstream compressed using current video coding standards is very vulnerable to errors, especially in mobile or wireless environments.

To cope with residual errors in video communications, diverse error resilience and error concealment techniques have been developed [4,7]. It is necessary to emphasize that when talking about error resilience, it is usually referring to the operations to cope with residual errors at the application layer. Here the residual error refers to the errors delivered to the application layer by the transmission system of a network, after first error control (conventional error control) takes place in the data link layer of the network. To maintain interoperability, any error resilience tool compatible with current video coding standard is desirable.

The MPEG-4 video coding standard has been finalized. To address the need for video communication in unfavorable channel conditions, five error resilience tools have been