



# International Journal of Digital Multimedia Broadcasting

## Journal Menu

- [Abstracting and Indexing](#)
- [Aims and Scope](#)
- [Article Processing Charges](#)
- [Articles in Press](#)
- [Author Guidelines](#)
- [Bibliographic Information](#)
- [Contact Information](#)
- [Editorial Board](#)
- [Editorial Workflow](#)
- [Reviewers Acknowledgment](#)
- [Subscription Information](#)

- [Open Special Issues](#)
- [Closed Special Issues](#)
- [Published Special Issues](#)
- [Special Issue Guidelines](#)

[Call for Proposals for Special Issues](#)

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Research Article

## Multiple Description Coding Using Data Hiding and Regions of Interest for Broadcasting Applications

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### Abstract

We propose an innovative scheme for multiple description coding (MDC) with regions of interest (ROI) support to be adopted in high-quality television. The scheme proposes to split the stream into two separate descriptors and to preserve the quality of the region of interest, even in case one descriptor is completely lost. The residual part of the frame (the background) is instead modeled through a checkerboard pattern, alternating the strength of the quantization. The decoder is provided with the necessary side-information to reconstruct the frame properly, namely, the ROI parameters and location, via a suitable data hiding procedure. Using data hiding, reconstruction parameters are embedded in the transform coefficients, thus allowing an improvement in PSNR of the single descriptions at the cost of a negligible overhead. To demonstrate its effectiveness, the algorithm has been implemented in two different scenarios, using the reference H.264/AVC codec and an MJPEG framework to evaluate the performance in absence of motion-compensated frames on 720p video sequences.

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