

Multi-Class Ranking Based Most Probable Prediction Unit Selection for HEVC Encoding

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ABSTRACT

In this paper, an incremental learning based multi-class Prediction Units (PUs) ranking approach is presented for High Efficiency Video Coding (HEVC) Rate-Distortion- Complexity (RDC) optimization. In particular, the process of PUs selection is formulated as a binary classification plus multi-class ranking task, and incremental learning is applied for classifier training to better exploit the information in the emerging training data. Furthermore, the proposed most probable PUs selection scheme is incorporated into a joint RDC optimization framework, where the complexity can be flexibly allocated targeting at minimizing computational cost under a constrained RD performance degradation. Experimental results demonstrate that the proposed approach can reduce 53.7% and 50.4% computational complexity on average under low delay P and random access configurations with ignorable RD performance degradation, which outperforms the state-of-the-art approaches in terms of RDC performance.

This paper will be presented in IEEE Visual Communications and Image Processing (IEEE VCIP), December 10 -13, 2017, St Petersburg, Florida, USA.

Supervisor: Prof KWONG Tak Wu Sam

Research Interests: Video Coding, Image Processing

All are welcome!



In case of questions, please contact Prof KWONG Tak Wu Sam at Tel: 3442 2907, E-mail: cssamk@cityu.edu.hk, or visit the CS Departmental Seminar Web at <http://www.cs.cityu.edu.hk/news/seminars/seminars.html>.

