Fuzzy Inference-Assisted Saliency-Aware Convolution Neural Networks for Multi-View Summarization

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Abstract : The Big Data generated from distributed vision sensors installed on large scale in smart cities create hurdles in its efficient and beneficial exploration for browsing, retrieval, and indexing. This paper presents a three-folded framework for effective video summarization of such data and provide a compact and representative format of Big Video Data. In the first fold, the paper acquires input video data from the installed cameras and collect clues such as type and count of objects and clarity of the view from a chunk of pre-defined number of frames of each view. The decision of representative view selection for a particular interval is based on fuzzy inference system, acquiring a precise and human resembling decision, reinforced by the known clues as a part of the second fold. In the third fold, the paper forwards the selected view frames to the summary generation mechanism that is supported by a saliency-aware convolution neural network (CNN) model. The new trend of fuzzy rules for view selection followed by CNN architecture for saliency computation makes the multi-view video summarization (MVS) framework a suitable candidate for real-world practice in smart cities.

Keywords : big video data analysis, fuzzy logic, multi-view video summarization, saliency detection

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