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Visualizing Multimedia Structure

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In this talk we review a general framework for visualizing multimedia structure using inter-sample similarity. The approach is unsupervised and readily adaptable to various modalities, feature representations, and similarity measures. The resulting visualizations suggest approaches for automatically characterizing the temporal structure of media streams.

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Abstract
In this talk we review a general framework for visualizing multimedia structure using inter-sample similarity. The approach is unsupervised and readily adaptable to various modalities, feature representations, and similarity measures. The resulting visualizations suggest approaches for automatically characterizing the temporal structure of media streams. We consider two examples. The first is a system for identifying repetitive structure in music and audio. We use it to detect chorus segments in popular music for use as summaries. The approach provides a complete structural characterization of the audio stream that enables flexible summary design. The second example is a system for high performance video segmentation. This system combines inter-sample similarity for representing local temporal structure and supervised classification for detection of different types of shot boundaries. We also integrate non-parametric feature selection to further enhance performance and evaluate the system on a large scale data set. Both systems retain the generic character of the visualization framework, and can be adapted to other modalities and contexts.

Speaker Bio
Matthew Cooper is a Senior Research Scientist at FX Palo Alto Laboratory, where he works in the Interactive Media group. He received the BS, MS, and DSc degrees in Electrical Engineering from Washington University in St. Louis in 1993, 1994, and 1999 respectively. His primary research focus is developing content analysis techniques that enable multimedia management and information retrieval applications. His research interests include multimedia analysis, information retrieval, statistical inference, information theory, and computer vision.