ManiCode - Efficient Real-Time Generation and Coding of Manifold Augmented Video Data

Body:

Aim:

ManiCode aims at the efficient creation and transmission of TV feeds which are augmented multiple times in different ways, e.g., multiple news banners or advertising boards for different regions or scene augmentations for different devices. Within this project, we develop a video analysis and synthesis system for the efficient and automatic creation of multiple content-specific augmentations. We further research and develop an efficient video coder in soft- and hardware which highly reduces the total bit rate of multiple augmented feeds.

Approach:

To generate video feeds with augmented content (localized feeds) from the real camera-captured signal (world feed), areas containing objects to be replaced (e.g. advertising boards) have to be robustly detected in the world feed even if these areas are occluded, nearly out of the field of view or blurred. The localized feeds are generated by the replacement of these areas by perspective-correct aligned individual virtual content. Additionally, lighting and occlusions have to be reconstructed.

For the transmission of multiple localized feeds and one world feed over common distribution DVB-channels (e.g. DVB-S2), all feeds have to be multiplexed in one transport stream (MPEG-TS). As a trivial approach, all video feeds may be encoded separately with a common video encoder. This would result in high data rates with high total transmission costs. In ManiCode we will exploit the high redundancy between each localized and the world feed. Whereas the encoded world feed is left unchanged, for each localized feed only not-redundant content, i.e. only the augmented content of each stream, will be encoded using a common video encoder.

Aiming at highly energy efficient high quality video encoding, a dedicated video encoder is developed for the encoding of the localized feeds within this project.

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Project abstract:

Augmentations of TV feeds with virtual elements allow viewer-specific TV content. This is especially interesting for the targeted advertisement in live sports in which sponsors currently can only buy and right holders can only sell one worldwide package. To overcome this limitation, ManiCode aims at the virtual replacement of the (real) advertising boards by an arbitrary number of targeted advertisements in real-time. For the bandwidth (and thus money) saving transmission of all generated streams (world feed as well as virtually augmented localized feeds), a highly efficient encoding will be developed.

Members:
ostermann

Project manager:
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Project duration:
May 2016 – April 2018

Project type:
uropäische Union (Eurostars), Bundesministerium für Bildung und Forschung (BMBF)

URL:
https://www.eurostars-eureka.eu/project/id/10301

Research Area:
Next Generation Internet

Status of the Project:
Bibsonomy show project publications:
1
Bibsonomy use tabs to list publications:
1