

At the **Quality and Usability Lab** (www.qu.tu-berlin.de) of **Deutsche Telekom Laboratories**, which is part of Berlin Institute of Technology (**TU Berlin**), there is an opening for a

Master's Thesis (Master- / Diplom- / Magister- / Studienarbeit)

on the following topic:

Development and Implementation of error concealment methods for video decoding

Topic Description

By now there exist a huge number of implementations for H.264 video decoders, commercial and open source. Most of these implementations focus on achieving high performance. For instance, a full HD video is expected to be playable on an average PC in realtime. Less attention has been paid so far to a decoder's behavior in the case of bitstream errors or packet loss. Since information carried in a compressed video-bitstream is strongly interdependent, even small errors may produce huge visible artifacts, which further may propagate in time.

To overcome these problems, many different so called "error concealment techniques" have been proposed. These are all based on the idea that video-frame areas that have been gone missing due to an IP-packet loss can be interpolated from neighboring areas or previous content. Of course these interpolations are unlikely to be 100% correct, but should be able to visually conceal the loss of information in certain areas of a decoded video-frame.

Possible candidates for concealment techniques in an H.264 decoder shall be reviewed, selected and finally implemented into an existing decoder software. An interface to concealment methods already exists in this software, so basically only these methods have to be touched.

Workplace: The work is to be conducted at T-Labs premises in Darmstadt or at T-Labs, Berlin (no accommodation provided). In both cases, a regular exchange between the Berlin and Darmstadt premises is foreseen.

Concrete Tasks

- Literature/web survey on related concealment methods
- Evaluation and implementation of the most promising of these techniques
- Comparing different techniques in their objective and subjective capabilities
- If possible, development and implementation of own ideas

Requirements

- Studies in computer science, engineering or related fields
- Programming skills in C++ (working under Windows XP and Visual Studio)
- Some knowledge and ideally experience with the techniques of signal processing

Contact

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