

## Possible topics for bachelor/master thesis, research internships/projects

**Topic:** Learned Image/Video Compression for Machines

**Description:** More and more image and video data is generated and automatically processed by algorithms. Possible scenarios can be surveillance, intelligent transportation, Smart City systems or intelligent industry. Often, the recording device has not the computational power to perform the computer vision algorithms locally. Therefore, it is inevitable to transmit the recorded information to a remote cluster on which the analysis is performed. An uncompressed transmission is typically infeasible due to bandwidth limitations. In terms of Video Coding for Machines (VCM) two options arise. Firstly, the analysis can be performed on the compressed video data and secondly, only the required features for a analysis task are compressed and transmitted to the remote device.

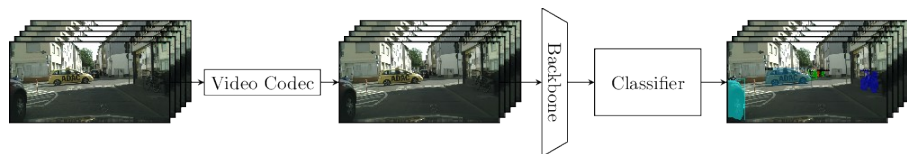


Figure 1: VCM scenario, analysis is performed on compressed video

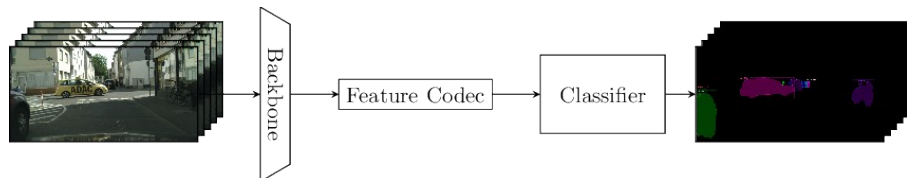


Figure 2: VCM scenario, analysis is performed on compressed features

Possible topics for student thesis can be:

- Learned saliency video coding
- Feature coding for VCM
- Joint video and feature coding

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**Prerequisites:** Python, Deep Learning (PyTorch/TF), Image and Video Compression

**Available:** Immediately