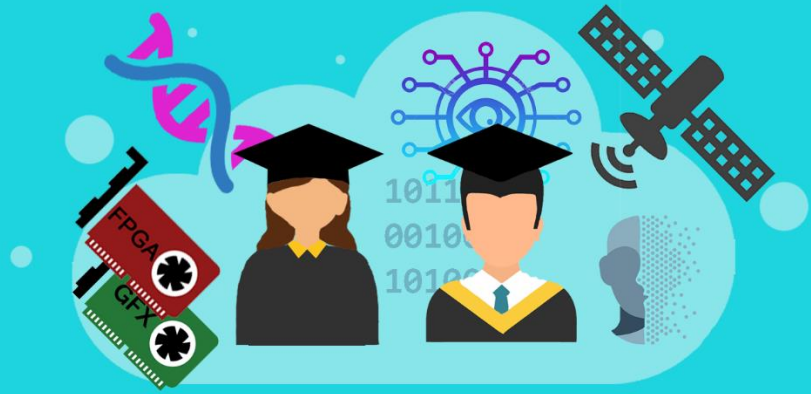


# Diploma Thesis

Microprocessors and  
Digital Systems  
Laboratory



## **Reconfiguration of FPGAs for helping Internet-of-Video-Things (IoVT)**

Among different kinds of sensors in IoT era, visual sensors (e.g cameras) have a key role, since they can capture rich and resourceful content. An important characteristics of video-based IoT applications is that they depend a lot on the quality of the video by increasing resolution. As a result, they generate a huge amount of data which is transmitted to the cloud for processing (video analytics) as IoT devices have limited storage and processing capabilities. An idea to help end users is to equip drones with hardware accelerators and they will fly over congested networks and help video-based applications by providing processing closer to the edge.

The goal of this thesis is to explore the cost of reconfiguration of an FPGA which serves as an offloading device close to the edge users. Resource management techniques regarding the offloading levels need to be developed. Additionally, video based functions will be utilized as services, while soft GPU architectures will also be explored.

### **PREREQUISITES:**

FPGA, VHDL, computer architecture

### **READING MATERIAL:**

1. FGPU: An SIMT-Architecture for FPGAs
2. A dynamic partial reconfigurable overlay concept for PYNQ

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