

Optical Flow from Event-based Cameras

Research Project or Master Thesis

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Conventional sensor



Event-based sensor

Figure 1: Comparison of a RGB and an event-based image. The event-based image is captured by

The professorship of Digital- and Circuit design (DST) is working in the field of Convolutional Neural Networks (CNNs) for various computer vision tasks. In this context the aim is to generate large-scale datasets for human activity recognition (HAR). Where the human eye is sensitive to motion boundaries an event-based camera captures exactly these motion directly. For testing and evaluation purposes the goal of this work is to generate a human detection pipeline based on these data.

The students work isn't limited to this work but should at least contain the following steps:

- How does the sensor (physically) work?
- Create a test setup with a motorized turntable and a object which is placed on it to capture data
- humans can come from playmobil or from a 3D printer
- Interpret and describe the data and try to detect humans
- from the event stream compute optical flow / motion boundaries
- evaluation of the results, e.g. comparision to a RGB images
- optional: try out spiking neural networks to detect humans, etc.

Requirements

- basic understanding in computer vision
- at least a 'good' result in Computer Vision I
- good programming skills in e.g. Python or C++

Contact Information

If you're interested in this topic please send a Mail to roman.seidel@etit.tu-chemnitz.de or +49 371 531 30527)