Masterthesis

# Neural Modelling of Event Camera Streams for Biosignal Analysis

**Application for biosignal estimation with focus on data representation**

## Background

*Event cameras*, sometimes called *neuromorphic cameras,* are an alternative to regular frame-based cameras and have been applied in autonomic driving and drone control. In contrary, to frame-based cameras, they have a high dynamic range, can resolve small time intervals, and provide a sparse data representation. So far, their usefulness in medical applications has not been tested extensively.

Tasks:

- Estimate biosignals from event camera stream
- Continue measuring subjects based on existing measurement plan to create a dataset
- Develop a data representation suitable for machine learning
- Adapt existing deep learning architectures to the problem
- Data preparation and documentation for further research

Figure 1: Event-Camera Stream vs. frame-based camera
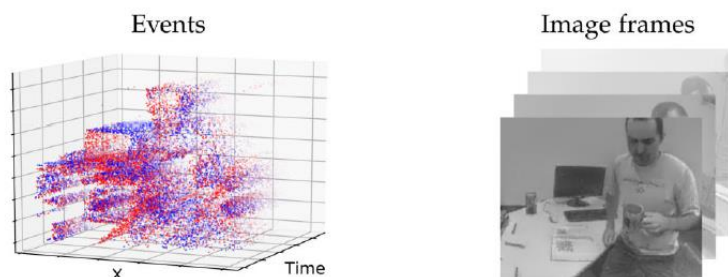


## *Requirements:*

Ability to work independently, experience with Python, interest in data science, machine learning and signal processing

Starting date: From now on          Languages: German, English

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