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M A S T E R A R B E I T

Shape recognition and matching for event-based vision

Problembeschreibung:

We at NST work with a new generation of cameras: biologically inspired event-driven silicon retinas, so called dynamic vision sensors. They allow efficient solutions for various visual perception tasks, e.g. tracking, or motion detection[1]. Similar to retinal photoreceptors in mammals, any perceived light intensity change in the DVS generates an *event* at the corresponding pixel. The DVS thereby emits a stream of spatiotemporal events (spikes) to encode visually perceived dynamic features that in contrast to conventional frame - based cameras, is largely free of redundant background information. The DVS offers multiple additional advantages, but requires the development of radically new asynchronous, event-based information processing algorithms. If you choose this thesis you will get to work with DVS. The task is to develop one such new algorithm for extracting objects' shapes from DVS event streams and find good shape descriptors. These could potentially be used in further algorithms, e.g. for tracking or depth extraction. You will gain insights in computer vision, particularly, but not limited to event-based computer vision, unsupervised learning techniques as well as hands on programming.

Leistungen:

- Get familiar with event-based vision paradigms
- Search the literature for shape-extracting algorithms for event-based data
- Develop or extend an algorithm for real-time extraction based on techniques found in the literature and discussions with your supervisor
- Show the efficacy and evaluate the performance of your algorithm

Betreuer/-in: Lukas Everding

Beginn:

Zwischenbericht:

Abgabe:

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