

Title: Real-time Object Tracking for Event Cameras

Abstract:

Object tracking is a fundamental task engaged in many cutting-edge applications, e.g. auto-driving and surveillance. The recently developed event camera brings new possibilities to solve inherent challenges in frame-based object tracking, such as deformation and re-scale problem, background clutter and motion blur. Instead of synchronized frames, event cameras record motion as an asynchronous event stream $S = \{(x_i, y_i, t_i)\}$ in an ultra-high temporal resolution more than 1M Hz. In this work, a tracking framework is proposed to track a single object in a recursive manner aligned with variate event rate. Event data are modelled as spacetime event clouds and fed to an adapted PointNet architecture to extract spatial and temporal information of the target object. Furthermore, the proposed framework is capable to process events in a continuous and recursive manner real-time and generates event-wise bonding box to form a best-fit and smooth bounding volume over time.