Event-based Neuromorphic Image Sensor Chip Design

Participating faculty

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Research Question

The project focuses on developing a cutting-edge image sensor that mimics the retina's processing capabilities. Unlike traditional frame-based sensors, this chip uses an event-based approach, where each pixel independently detects changes in brightness and sends data asynchronously. This method significantly reduces data redundancy and power consumption, making it ideal for real-time applications like object tracking and motion detection. The neuromorphic design leverages spiking neural networks to process visual information efficiently, enabling faster and more accurate image analysis. This project aims to revolutionize image sensing technology by providing a highly efficient, low-latency solution for various applications, from robotics to autonomous vehicles.

Preferred background

The ideal candidate should have a background in analog circuit design, digital design, linear algebra, and FPGA design, and be proficient in programming (Matlab/Python). An interest in understanding the brain is essential.

For more information, see:

https://github.com/uzh-rpg/event-based_vision_resources