# CAVIAR: Convolution AER Vision Architecture for Real Time (IST 2001-34124)

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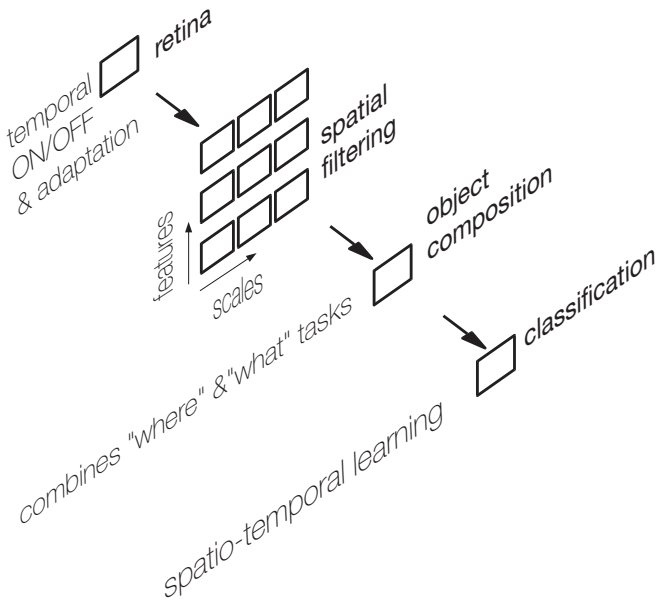
## Goals

To develop the infrastructure for hardware systems that use spikes for processing and communication by building a multichip real-time vision system

To understand how using spikes can benefit neural computation and real-time sensory processing

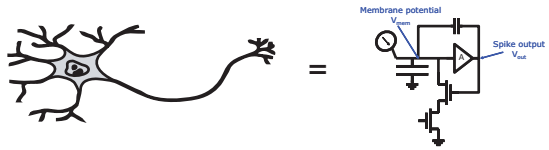
## Building blocks that model information processing flow in the visual system




## Local analog computation

### Grey matter = aVLSI

(analog Very Large Scale Integration)

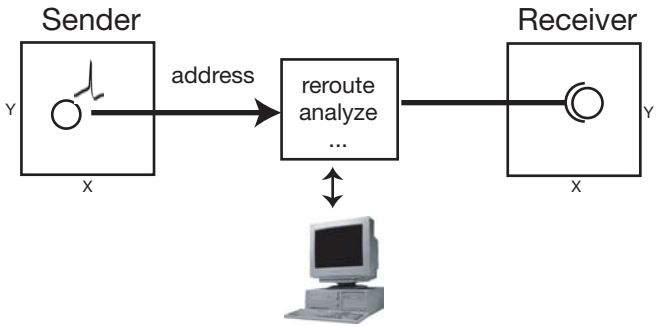



Local analog computations (e.g. I&F neurons) are perfomed by time-continuous analog transistor circuits integrated in large arrays

## Long range connectivity

### White matter = AER

(Address-Event Representation)




Neuron spike = Address-Event

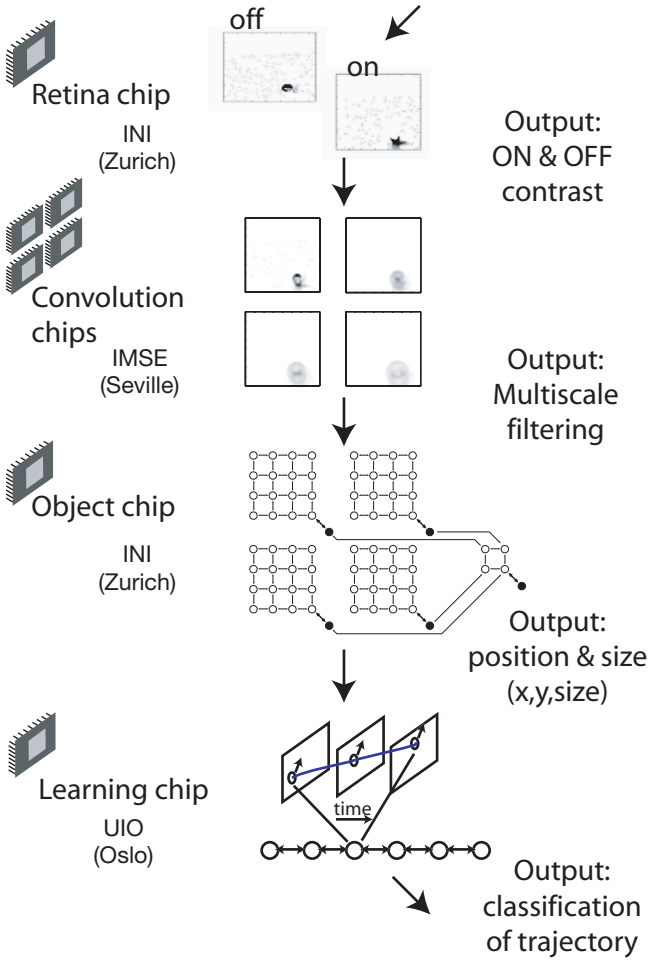
Bundle of axons is replaced by fast digital bus

Spikes can be arbitrarily rerouted to provide virtual wiring

Time represents itself

## Application:

### Track a bouncing ball




CAVIAR-PCI-AER
Computer Interface
USE (Seville)

To probe and inject spikes into AER buses