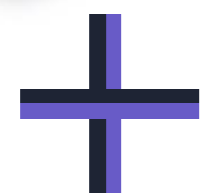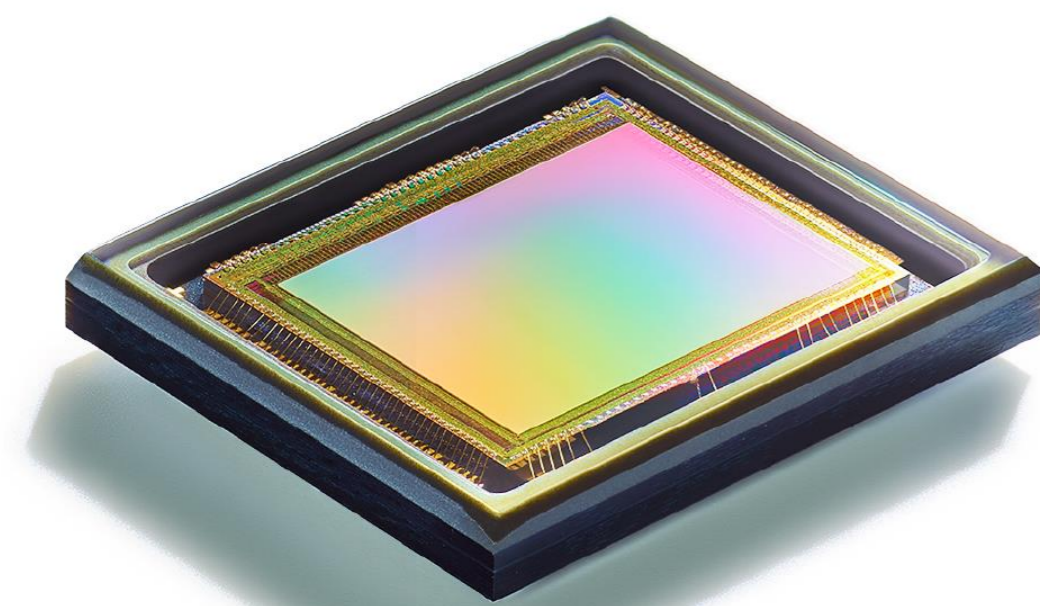PROPHESEE

METAVISION FOR MACHINES

NEUROMORPHIC VISION

+

AI

Each pixel in Metavision® sensor embeds an intelligence logic core, enabling it to **act as a neuron**.
Each pixel activates itself **intelligently and asynchronously** depending on the amount of photons it senses.
A pixel activating itself is called **an event**.

Events are driven by the scene's dynamics, not an arbitrary clock.
The Metavision® sensor **does not have a frame rate**.

This unlocks extreme time resolution of **1μs**
Frees from the need for **exposure times**
Allows for **124dB HDR** and **40 millilux** low-light cutoff
Generates **10 to 1000x less data**

Metavision® sensor when used in combination with a **VCSEL projector** results in a novel **Structured Light 3D** sensor
Other applications are IA/robotics, mobile/wearable, automotive

# EVENT-BASED STRUCTURED LIGHT

FAST, HIGH PRECISION
DEPTH SENSING
Event-based structured light

Today's state of the art depth-sensing techniques impose a **trade-off between exposure time, accuracy and robustness.**

By coupling an IR projector with Metavision® sensor, the **fast response time of each independent pixel allows for temporal pattern identification and extraction directly inside the sensor**. This allows for:

- State of the art accuracy

- **Up to 50x faster scanning times** (<1ms vs. 10-33ms in average with frame-based approaches)

- **Software complexity reduction** (matching is not done on frames after the fact but pixel by pixel, at the sensor level)

- **No motion blur** (no more tradeoff between frame rate and scanning time)

- **Outdoor-proof usage** (ultra-fast pulse detection enables power increase while keeping eye-safe rating)

3D point cloud of a face
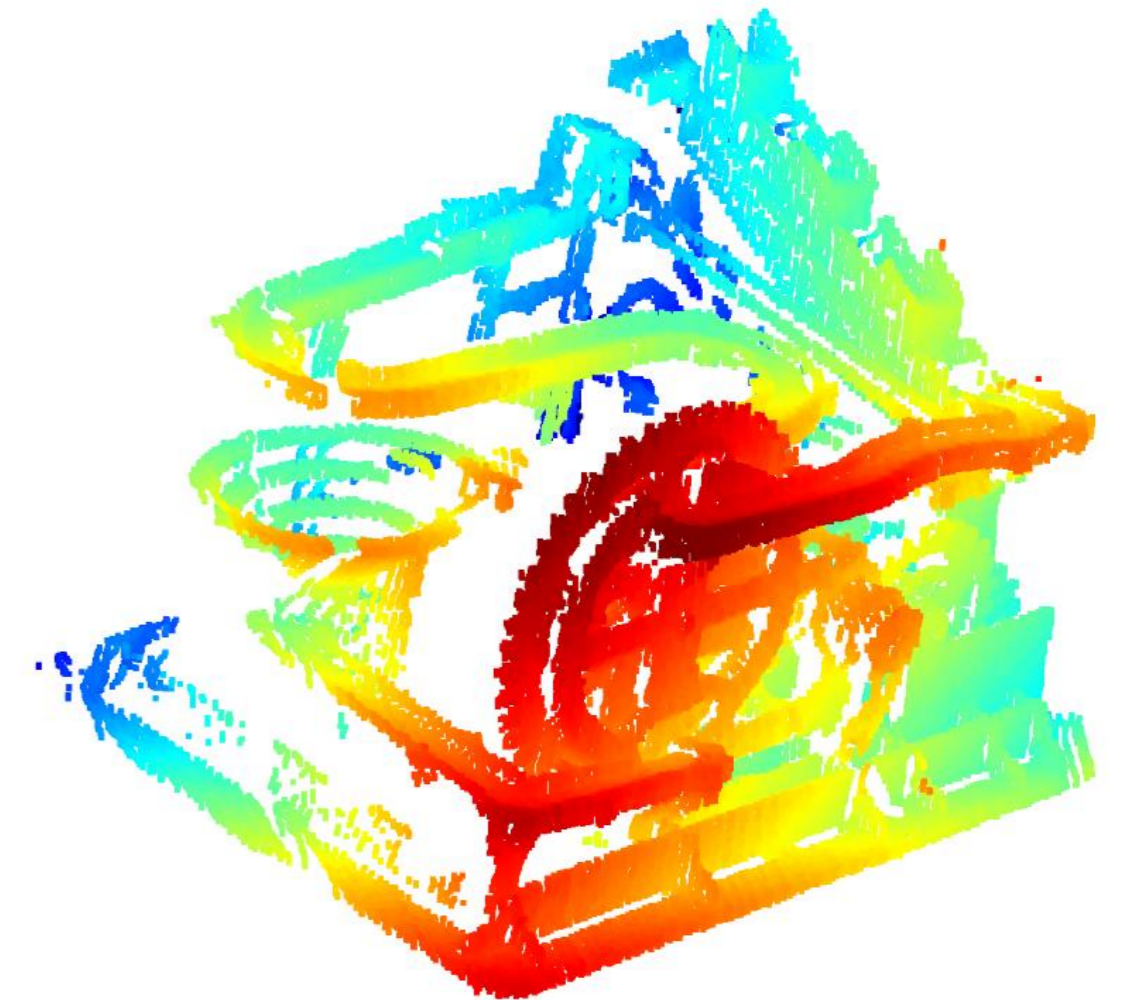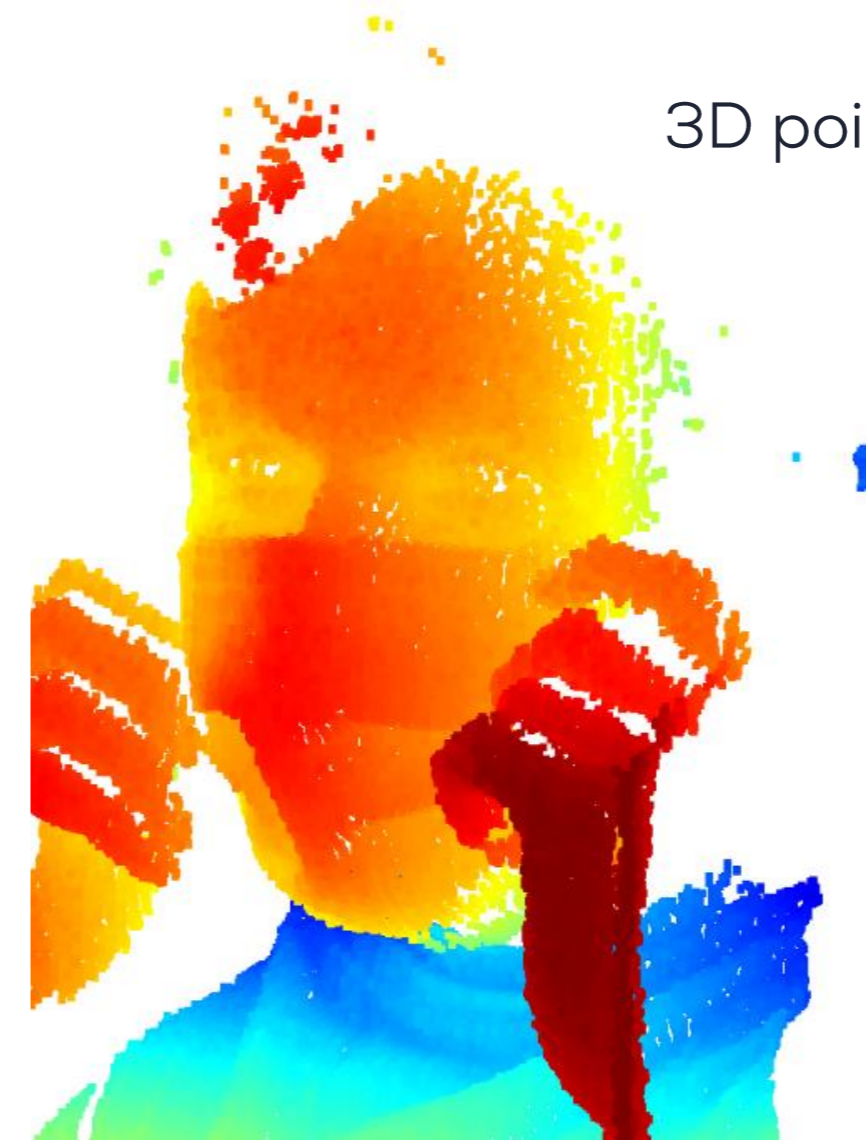
3D point cloud of a marble circuit
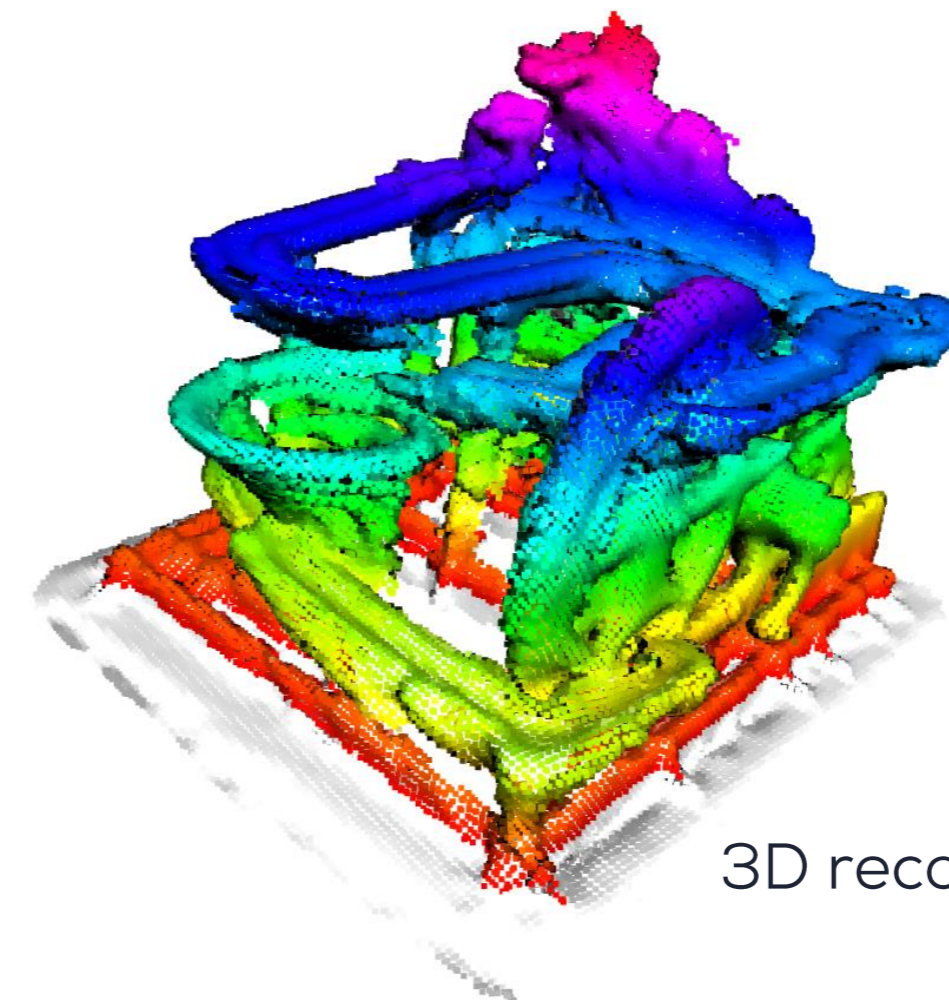
3D reconstruction using kinect fusion

PROPHESEE

ADVANTAGES

- WITH TEMPORAL PATTERNS, DOTS/LINES ENCODE THEIR IDS
- INCREASED ROBUSTNESS (ECC)
- MATCHING DOES NOT NEED GEOMETRY
- AUTO-CALIBRATION
- TEMPORAL PATTERN + FAST CAMERA → HIGH POINT CLOUD REFRESH RATE
- FAST SPARSE CAMERA → LOW POWER CONSUMPTION + LOW COMPUTATIONAL REQUIREMENTS

PROPHESEE

WE ARE LOOKING FOR

1. VCSEL projector makers partners

2. 3D point cloud users

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