Freie Universität Berlin

Demo: In-network Training and Distributed Event Detection in Wireless Sensor Networks

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Distributed Event Detection in WSNs

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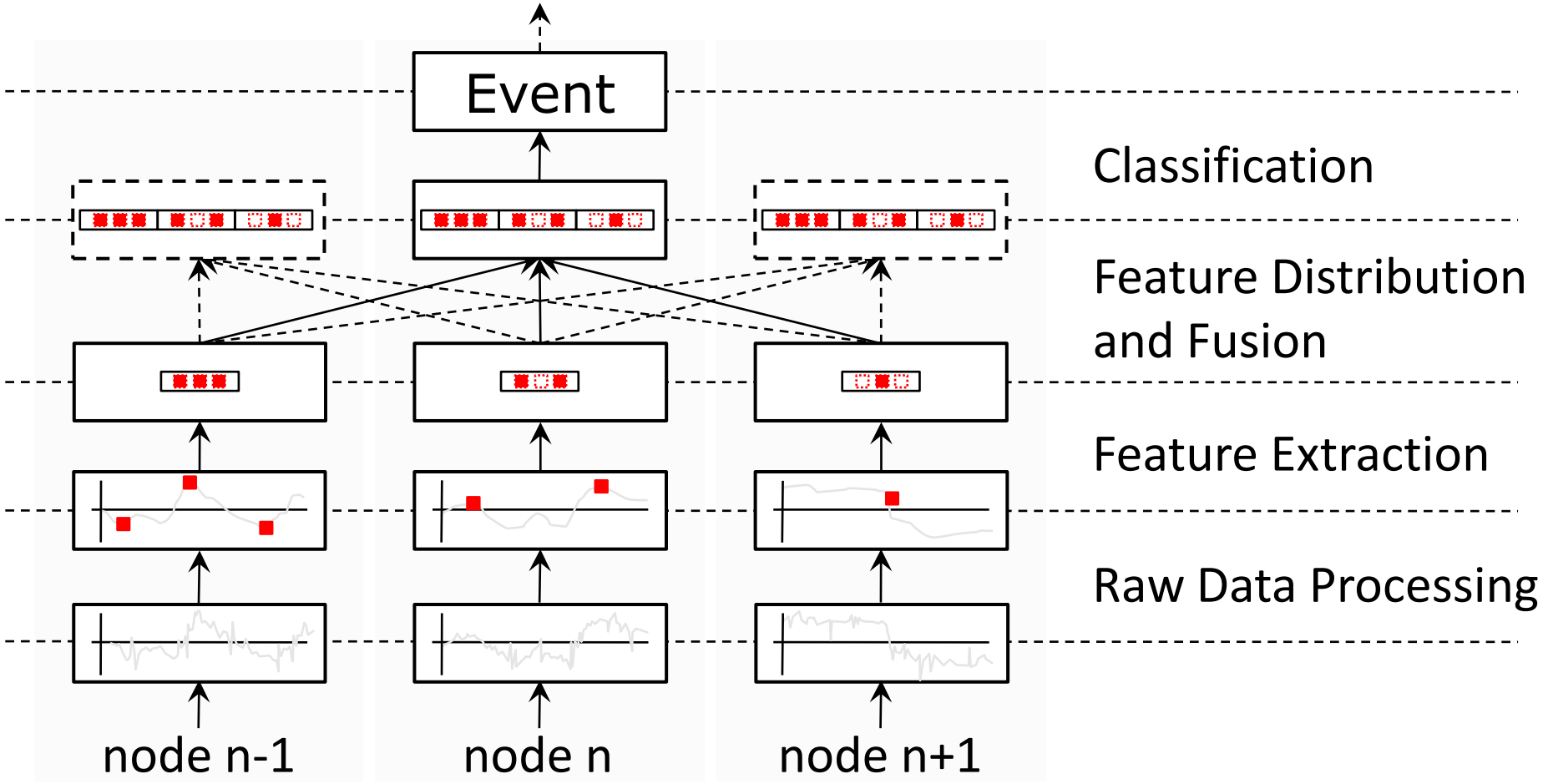
- Sensor nodes are trained to cooperatively recognize deployment-specific events
  - Avoid transmitting raw data to base station

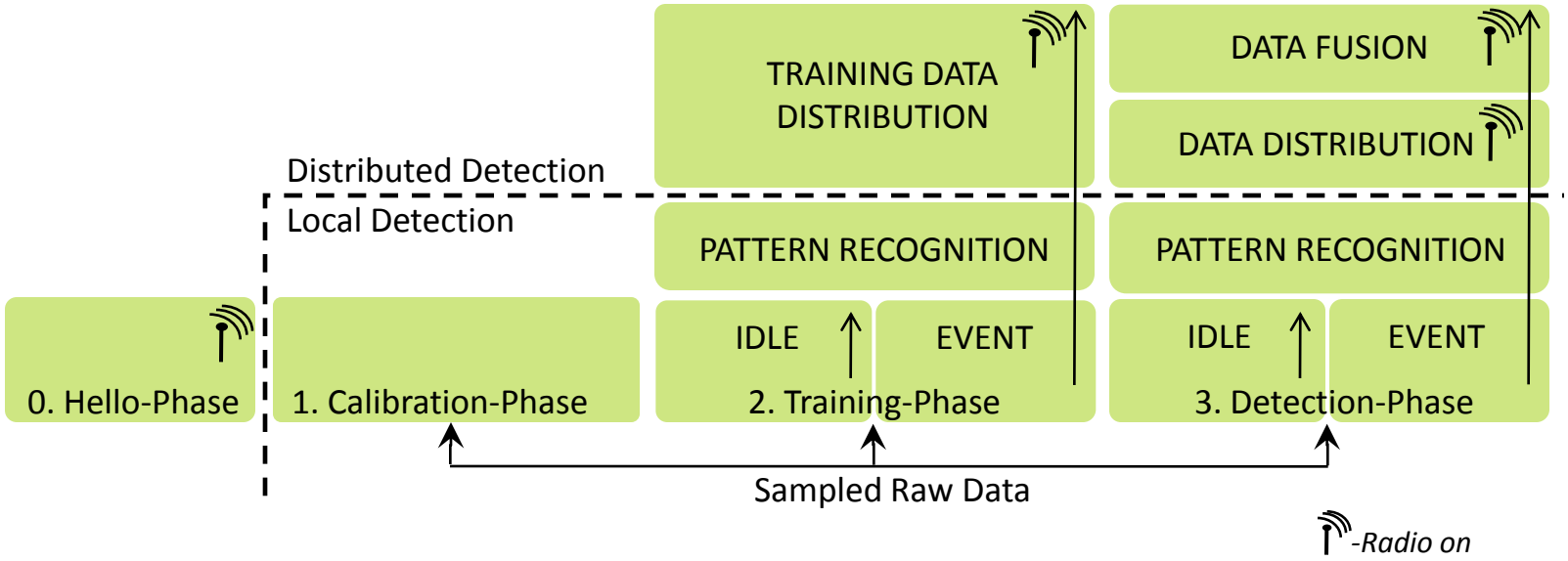
- Both training and event detection are performed without the need for central coordination or processing
  - Only information about detected event needs to be reported

Detection Architecture

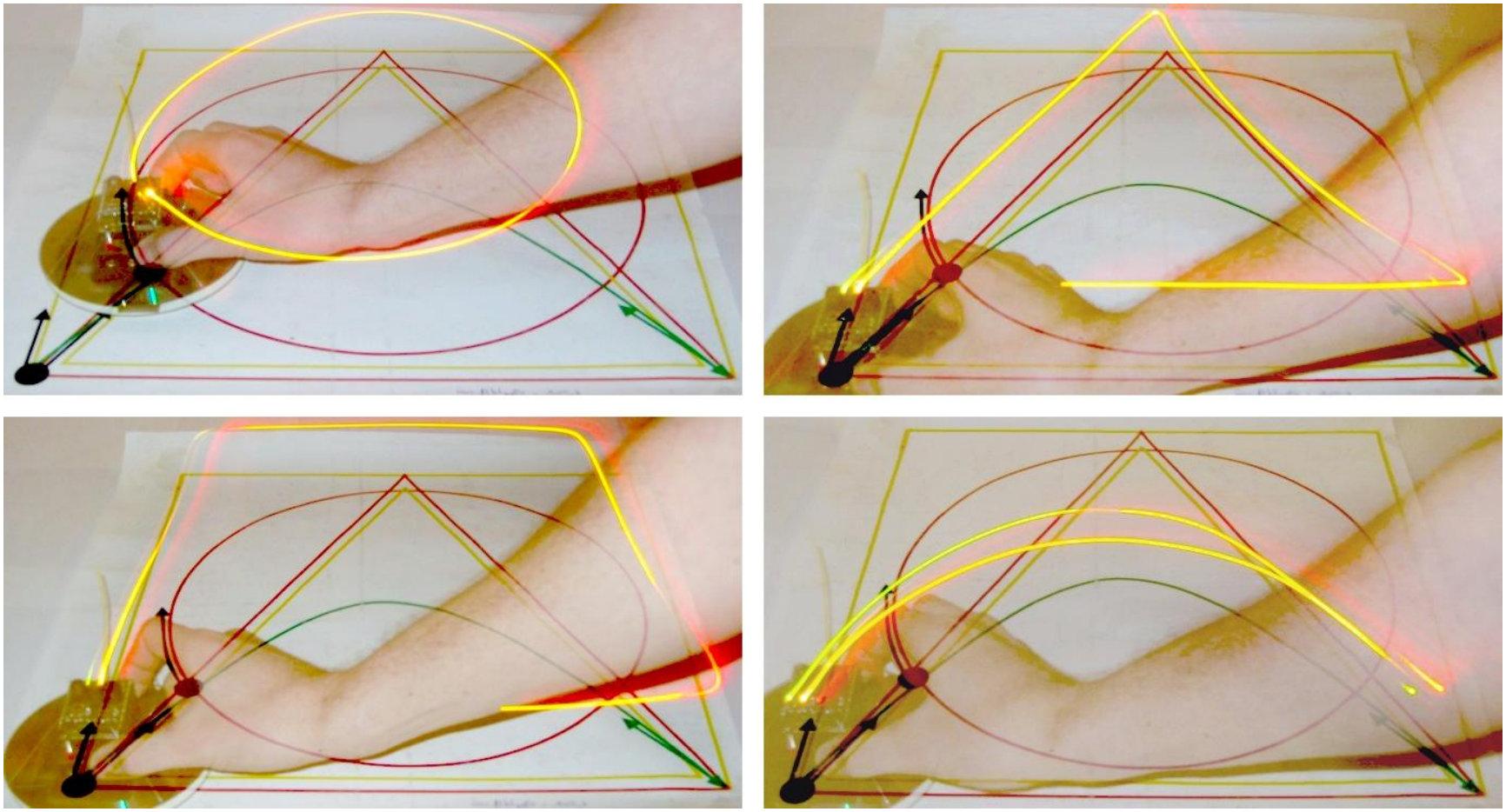


Calibration, Training & Classification

- Phases in local / distributed training and event detection:

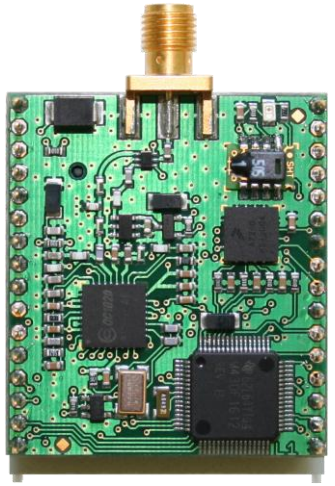


Lab Experiment: Detect Shapes

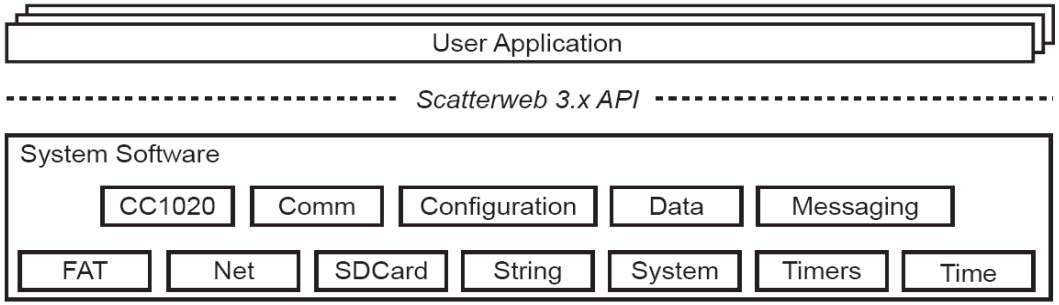


ScatterWeb Sensor Nodes

- ScatterWeb WSN Platform:
  - Developed by AG CST at FU Berlin.
  - Project started in 2002.
  - Components commercially available.



- Modular Sensor Board (MSB):
  - TI MSP430 16-bit microcontroller
  - Chipcon CC1020 radio transciever
  - 2 KB RAM, SD Card support



Use Case: Fence Monitoring

Experimental Setup

- Ten-element construction fence, each element 3.5m x 2m
- One ScatterWeb MSB sensor node per fence element
- Weather-proof junction boxes (80mm × 40mm) as casing

Fence Monitoring Video

Current Work: Deployment

- 100 nodes to watch over real construction site