Fraunhofer
IPMS

EMBEDDED AI FOR SENSOR DATA FUSION

EUREKA CLUSTERS AI CALL

April, 22nd 2021

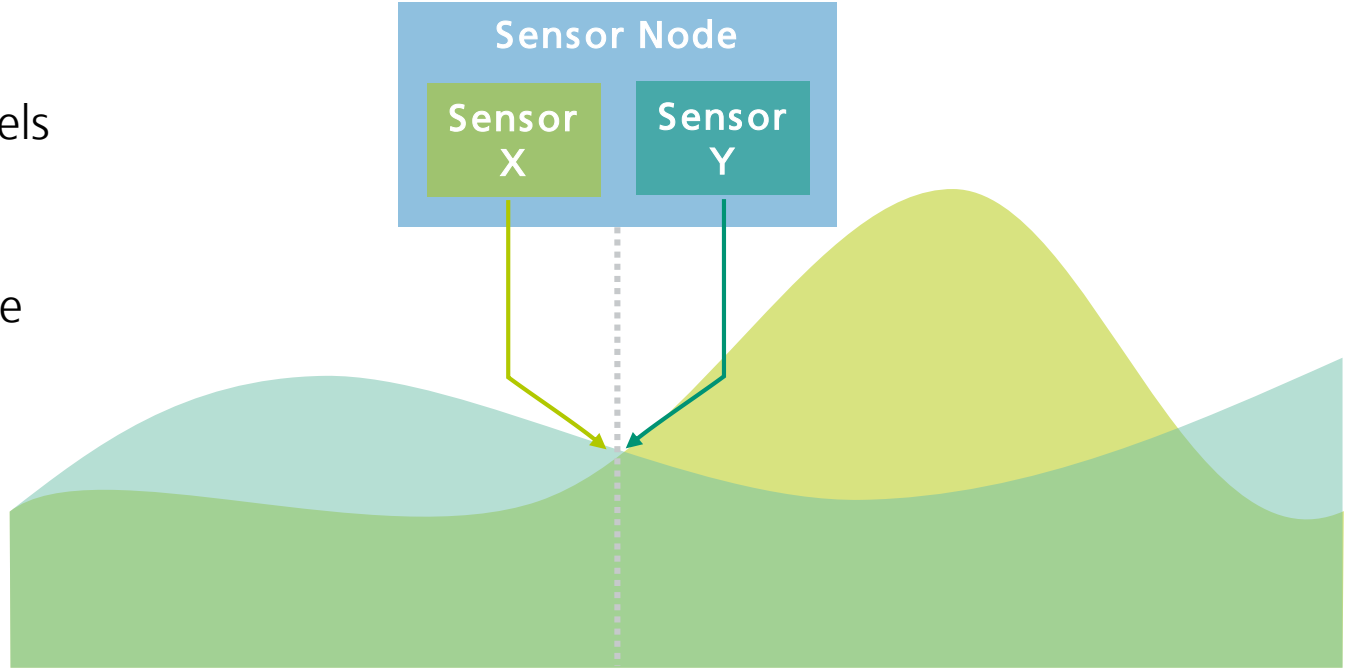
Dr. Lion Augel
Fraunhofer Institute for Photonic Microsystems
Environmental Sensing
lion.augel@ipms.fraunhofer.de
www.ipms.fraunhofer.de

MOTIVATION

Sensor Networks

Measurements as basis for modelling and prediction

- More **additional** sensor nodes allow to refine models
- **Multimodal** sensor capabilities allow to determine interdependence of quantities



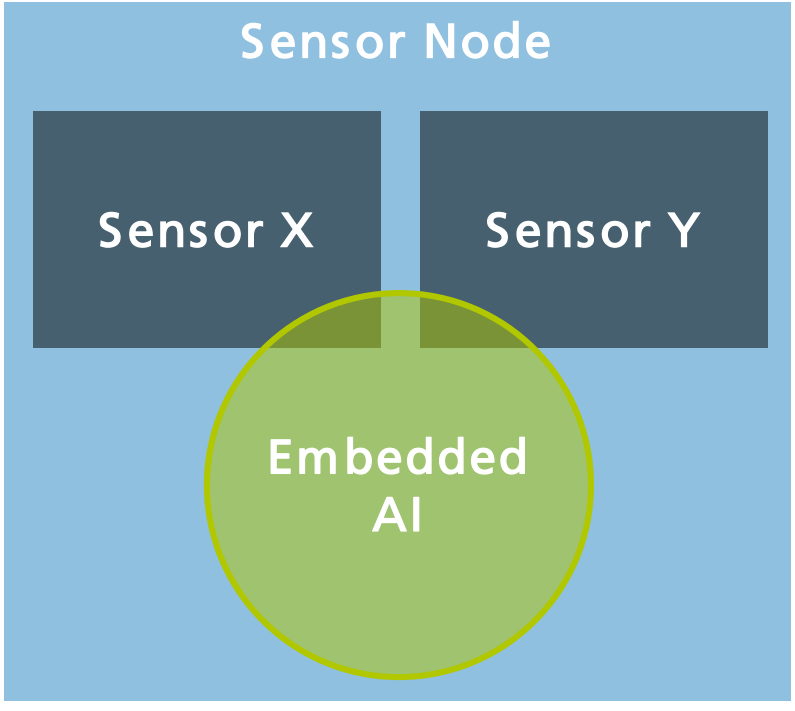
EMBEDDED AI

For Sensor Data Fusion

Limitations arise in real sensor nodes

- Sensor specifications
- Sensor aging
- Sensor calibration
- Energy consumption
- Amount of data

Embedded AI as a way to address these limitations



APPLICATION

Project Use Case

Demands arise especially in **agricultural and life science** for future precision farming

- ecosystems with complex interdependency
- Large areas
- Rough environment
- Power supply typically not available

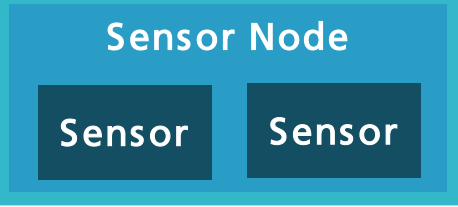
Gruber-Genetti.il

OBJECTIVE AND APPROACH

Solutions for Sensor Networks

1 **Identifying** specific **use cases** with currently under-determined data basis

2 **Evaluating available technique** and methods for AI and sensors



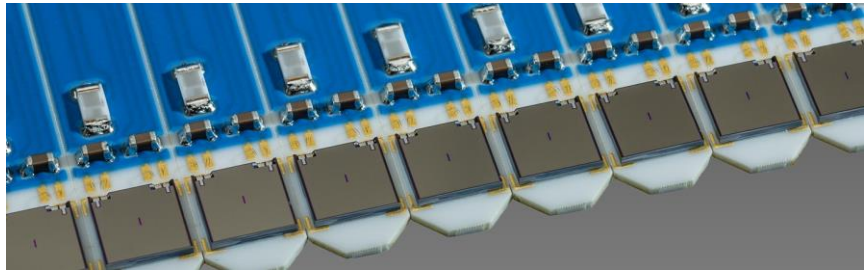
3 **Improve sensor usability** by sensor data fusion and optimized maintainability through embedded AI

NEEDS

Support and Partners

WHAT WE PROVIDE

- Knowledge in semiconductor based sensor fabrication and specifications
- Qualification processes for sensor production
- Selected customizable sensor solutions
- Knowledge in sensor application



WHAT WE ARE LOOKING FOR

- Application specialists
- Partners with knowledge in embedded and edge AI