Fraunhofer

IOSB-INA

PROFILE

Our mission: Empowering our partners for the digital age!
Fraunhofer IOSB-INA is a leading research institute in the field
of industrial automation, providing support on digital transfor-
mation to suppliers, mechanical and plant engineers as well
as operators of automated technical systems. As a leading re-
search institute in the field of industrial automation we support
suppliers, mechanical and plant engineers, as well as operators
of automated technical systems in digital transformation.
Our expertise lies in the application knowledge of industrial
automation, including networking, analysis, monitoring and
user-friendly design of technical systems. Application know-
ledge of industrial automation – the networking, analysis and
monitoring as well as the user-friendly design of technical
systems - are our core competencies.

Our business areas:

• Industrial Internet (IIoT)
• Intelligent automation
• Assistance systems
• Cyber security in production

MACHINE LEARNING

EFFICIENCY BY OPTIMIZATION, FAILURE
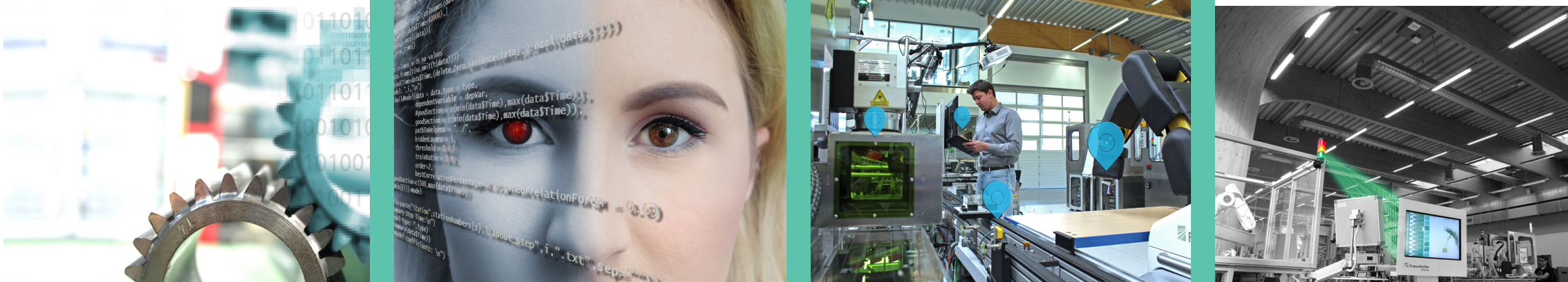ANALYSIS AND CONDITION MONITORING

CONTACT

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BOOSTING EFFICIENCY

Monitoring. Diagnosis. Optimization.
These are the main challenges in operating technical systems. Production systems contain valuable information. Such information is gathered from process data (sensor data) and can be used to detect wear conditions, error causes and optimization potentials.

Too complex and too big?
Size and complexity of the data make it impossible to leverage this information. New data-driven machine learning methods and model-based diagnosis facilitate automatic information extraction. This information can be used by automatic assistance systems to monitor, diagnose, and optimize production systems.

Fraunhofer Lemgo has developed various methods: condition monitoring, predictive maintenance, diagnosis, optimization, information retrieval. This has been validated in industrial use-cases (e.g. Miele & Cie. KG, Audi AG).

Let us help to realize your data potentials.

OUR RANGE OF SERVICES

(1) Evaluation of your shopfloor: We check the potentials of your data. this comprises methods for anomaly prediction, detection of wear conditions, optimization (energy, cycle time, throughput, quality)
(2) Design of specific algorithms designed for your use-cases
(3) Test, development and demonstration of these methods in the BigData Lab, the demonstration plattform SmartFactoryOWL..
(4) Implementation of machine learning methods with various programming languages into your production systems.

Business Understanding
Building mutual understanding of machines and processes, control- and communication systems, requirements, semantic anotation and data sampling rate.
Objectives: breakdown prevention, fault detection, optimization

Transfer results:
Roadmap to rollout (algorithms, needed infrastructure and teaching usage).

Offer

Data acquisition

Data analysis
Performance evaluation of various methods for pre-defined use-cases.

KNOW-HOW AND RESSOURCES

Experienced data scientists, process expertise, PLC expertise, ICT expertise, software development

Extensive algorithm toolbox, BigData Lab with computational powers

Demonstration platform SmartFactoryOWL containing prototypes of IOT production systems

Hardware- and software solutions for data logging with PROFI-NET, PROFIBUS, EtherCAT, including OPC UA

SELECTED REFERENCES

• Audi AG, Ingolstadt: Condition Monitoring in automotive industry, using models learned with timed automaton technology.
• Miele & Cie. KG, Bielefeld: Cylce time for dishwasher production