Predictive Maintenance for Industry 4.0

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Why Predictive Maintenance?

Storing monitoring data in the cloud

Motivation

Challenges

Envisioned Approach

Future

Cloud

Sensors

Production line

Working stations & servers

Accessing monitoring data

Predicting failures

 Recommending maintenances

Predictive Maintenance for Industry 4.0

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Challenges

Failures as rare events [1]

Several types of failures

Lack of real world data with health information

Defect sensors

Huge amount of sensors and data

Inconsistencies

Envisioned Approach

Forecasting & Threshold
- Set/Learn threshold
- Forecast indicators to proactively send warning

Machine Learning
- Feature selection
- Learn correlation between indicators and health

Root Cause Analysis
- Determine point of failure
- Schedule purposeful maintenance

Motivation

Predictive Maintenance for Industry 4.0
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Future
## Conclusion

### Problem
- Failures may cause downtime of an entire factory
- High costs for downtime and reparation

### Idea
- Early detection of future failures of cyber physical production systems
- Proactive scheduling of purposeful maintenance

### Approach
- Data preprocessing
- Failure prediction using time series analysis and machine learning
- Root cause analysis

### Benefit
- Reduction of maintenance costs
- Improvement of factory availability
Thank you for your attention

Slides are available at https://descartes.tools/

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