INDUSTRIAL AI AT BOSCH

Rahul Kapoor
Head of Services and Engineering
Bosch Center for Artificial Intelligence
PRODUCT LIFECYCLE
ALL PHASES CAN BENEFIT FROM AI
MANUFACTURING DATA AT BOSCH

Bosch has one of the largest manufacturing datasets in the world.

- 270 Manufacturing facilities
- 1000s of assembly lines
- Billions of parts manufactured each year

Data
- Process data
- Machine data
- Test data
- Supplier data
- Warranty data
AI IN MANUFACTURING

WHY?

- Cycle Time
- Yield
- Quality
- Equipment Efficiency
- Plant Logistics
- Raw Material
- Energy

Improve on
TEST TIME REDUCTION

- Removal of redundant tests
- Prediction of calibration settings

45% Test time reduction

34 Tests Removed

35% Savings from Pre-Calibration

120
100
80
60
40
20
0

$1.3m Savings
AUTOMATED OPTICAL INSPECTION FOR IMPROVING DEFECT RATE

► Improved quality inspection performance
► Reduced manual visual inspection effort
► Improved cycle time
► Automated defect type detection

AOI station

AI model

Manual inspection

Escape rate 0%
False alarm rate <0.5%
CROSS-VALUE-STREAM ANALYTICS

- Use upstream data to optimize downstream processes
- Identify cross-component influences
- Reduce redundancies
PRACTICAL CONSIDERATIONS OF AI IN CONNECTED INDUSTRY

- Is accuracy the right metric?
- Imbalanced dataset
- Robust to “out of sample” variations
- Beware of drift in data over time
- Impact on cycle time matters
- Models need to explain themselves
SUMMARY

By 2025, AI will be a part of all BOSCH products and also a part of making of it.
THANK YOU