From measurement to knowledge –

Quality Monitoring Tool

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Smart manufacturing brings solutions to existing challenges

- Real-time data from machines, processes and business environment are needed
- Industrial internet / IoT
- Integration of humans in IoT systems
- Short time to react on things
- Quick respond to customer needs
- Etc.

Currently, the industry utilizes extensively the first level of knowledge.

To achieve the higher levels of knowledge, new solutions for intelligent methods for data utilization are needed.
Support for decision making

- Vast amount of data is collected from the industrial processes
- Data is not valuable by itself
- **KNOWLEDGE**
- AI-based tools to support the decision making
- Different kinds of personnel with different needs
  - Operators
  - Process engineers
  - Product designers
  - Management
  - Maintenance
  - Etc.
- In SIMP, we developed an online quality monitoring tool in co-operation with VTT.
Data visualization and root cause analysis

- The prediction of the product quality is not enough
  - What went wrong?
  - What can be done differently?
  - How the good and the bad product differ from each other?
- Visualization is an effective way to present information
- Intelligent data visualization can be used to assist decision making
Intelligent data visualization

- Usually, the user can interactively choose parameters to visualization.
- Time and effort can be saved, if the system was able to present the relevant information right away.
- Research challenges:
  - What is a good product or manufacturing procedure?
  - How much information should be presented?
  - What are good suggestions for process parameters to improve the manufacturing?
Improving data quality

- The veracity of the data is in critical role when support systems for decision making are designed
- Data pre-processing is time consuming and requires skills
- Data quality can be improved with intelligent data pre-processing

Challenges
- Different data sources
- Different data formats
- Missing values
- Outliers and anomalies
- Noise
- Erroneous measurements
- Etc.
The future – today

We can dream about the future, or make it happen today together with our research and latest technologies:

Hilla Reboot C2Future