



Kolloquium zur Masterarbeit

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Image Recognition Application using deep learning in Compressed Air Industry

Compressed Air is one of the most versatile and convenient source of power which is known as the most commonly used energy carrier in industry and trade beside electricity. This is a cross-sector technology widely used in almost all manufacturing companies. The compressed air systems made up of multiple components known as compressed air components. To control the energy, these components are always under high pressure to adjust the power. While leakage happens in one component, the pressure will be lost and the system encounter flow resistance. This problem forces the compressed air package to consume much more energy to compensate the lost pressure. This issue happens often in compressed air packages.

According to German Energy Agency, DENA, the energy saving potential in compressed air components is around 50%. Most of this potential represents the detection and replacing defect components with the new one in a quick manner. The process of recognizing the exact article number of the component after detecting the leakage requires a technician available on the place they are deployed. Sometimes because of the chemical materials the serial numbers are corrupted. In this case, we are looking for a general solution to recognize and classify the defect components based on their corresponding article numbers to simplify the process explained above.

In era of digitalization, some solutions can be found to tackle such problems, e.g. Mobile application with QR-Code tag. But in real environment with high degree of humidity or possible contact with chemicals resp. severity of setting up such tags, they do not work properly where the compressed air components are installed.

As an effective and reliable solution, we have applied deep learning to ease the process of image classification. By applying state of the art in image recognition, subset of computer vision, could we tackle this problem. We have achieved an outstanding result by performing structured experiments also applying brand-new techniques in this work. As a proof of concept, we could present a solution which is also expandable using data science life cycle process.

**Donnerstag, 29. November 2018, 16:15 Uhr,
Videokonferenzraum 107, IfI (D3), Julius-Albert-Str. 4.**