Artificial Intelligence for Industry 4.0

In co-operation with PFW Aerospace GmbH and in the framework of Industry 4.0, automation of warehouse tools and component parts are explored. In this context, 3D object recognition and classification methods for component parts are being developed. In this industry co-operation project, we will apply state-of-the-art deep learning and machine learning techniques to classify 3D objects. The specific 3D objects to be recognized in this project are non-regular pipes that have maximum diameter of 10 cm and can extend up to 2.5 m.

There are multiple thesis topics available related to this project that span one or many of the following topics.

- Literature survey about the latest convolutional neural networks.
- Literature survey about depth sensors, LiDAR, multi-camera systems.
- Train different models to classify the pipes.

Requirements:
Students with a background in computer science, mathematics, electrical engineering, or other engineering majors. Pre-knowledge in convolution neural network, image processing, as well as machine vision is welcome. Strong self-motivation, reliability, and critical mind are expected.

Emphasis:

<table>
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<tr>
<th>Theoretical Study</th>
<th>Software Implementation</th>
<th>Hardware Implementation</th>
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- excellent support and advice
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Contact:
M.Sc. Ajit Basarur
E-Mail: ajit.basarur@kit.edu