

14) anAIRlyze - Analytics of sensor data of stock taking drones; doks.innovation GmbH, Germany

## **EXPERIMENT DESCRIPTION**

The *anAIRlyze* experiments improved the existing solution *inventAIRy*<sup>®</sup> that implements an indoor dronebased stock taking solution for warehouses, with a data analysis component. The generated raw data streams of the drone(s) may generally be separated into telemetry relevant data and observed product/object relevant data (Data-in-Motion). This data was visualized but not yet analyzed and processed. Those data streams in the experiment have been analyzed and transformed into higher level logistical KPI datasets (Datain-Rest). The goal was to visualize the KPIs in a specific dashboard for the end user who is then enabled to take necessary countermeasures for process optimization.



## **TECHNICAL IMAPCT**

During the *anAIRlyze* experiment conducted by doks. images of flights and sensor values (e.g. from battery) were collected and saved to rosbag files for later offline replaying and processing capability.

Upon further experimentation these datasets were used to find empty positions with TensorFlow which gave good results. The playback of other sensor values helped in the battery prediction which was also tested with good results on additional flights after the development and battery model creation.



## ECONOMICAL/BUSINESS IMPACT

To be able to compete, process quality must rise, so that human errors are identified and corrected on a regular basis. The approach of doks. within the warehouse is to have an automated drone solution doing this



cross check. Humans still operate forklifts and store goods in pallet racks, pick products and pack them for goods out. The automated drone solution can find those errors and report them for further investigation. The impact of such a solution is in general less errors been made, so that less search processes for specific objects are necessary. No more lost items which should be at a specific position but are somewhere else. With automated optical inspection and additional sensors attached to such a solution even qualitative aspects may be affected.

CONTACT

Martin Fiedler Doks.innovation.GmbH <u>martin.fiedler@doks-innovation.com</u> Ludwig-Erhard-Straße 10, 34131 Kassel, Germania

doks.