TU Clausthal
Clausthal University of Technology

Digitizing and Enhancing Conveyor Belt Performance in Eddy Current Separator using IoT and Raspberry Pi

Type	<Project Type: Research Track, Master Thesis>
Credits	<Project Credits (30LP)>

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Description

The project proposed herein aims to revolutionize the operational efficiency by focusing on a pivotal component: the conveyor belt. The optimal functioning of the conveyor belt is indispensable for the effective sorting and separation processes vital to the recycling and waste management sectors. This project seeks to proactively predict and swiftly rectify any deviations in the alignment of the conveyor belt through the ingenious application of an IoT-driven solution powered by Raspberry Pi technology.

Prerequisites

Python Programming: Ability to work with libraries such as OpenCV for image processing and machine learning frameworks for model development.
IoT Fundamentals: Understanding of how sensors, actuators, and microcontrollers like Raspberry Pi are used in IoT applications.
Machine Learning Basics: Familiarity with machine learning concepts, including supervised learning. Understanding of training, testing, and evaluating machine learning models.

Tasks

1. IoT System Setup
2. Image Processing Development
3. Machine Learning Model Creation
4. Real-time Detection and Alert System
5. Actuation Mechanism Integration

Resources

<https://opencv.org/>
<https://www.techtarget.com/iotagenda/definition/Internet-of-Things-IoT>
<https://neptune.ai/blog/image-processing-python>
<https://paperswithcode.com/task/real-time-object-detection#:~:text=Real%2DTime%20Object%20Detection%20is,a%20base%20level%20of%20accuracy>

Contact

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