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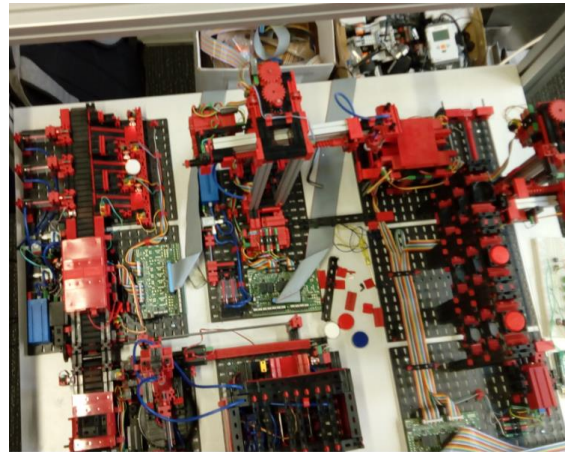
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BEng Robotics

# Can Machine Vision be used to Improve Efficiency in Manufacturing?

## Problem Statement

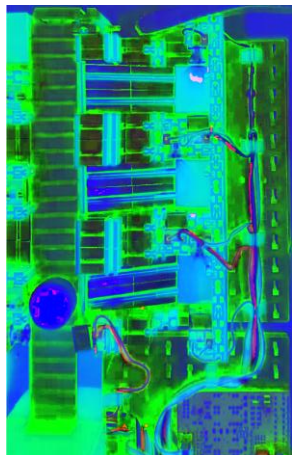
This project aimed to produce a system capable of locating and tracking white, red and blue cargoes travelling through the Fischertechnik model factory. Many factories employ machine vision to inspect products but is tracking cargo moving through a factory a viable application of machine vision?



The Fischertechnik model factory

## Approach to Problem

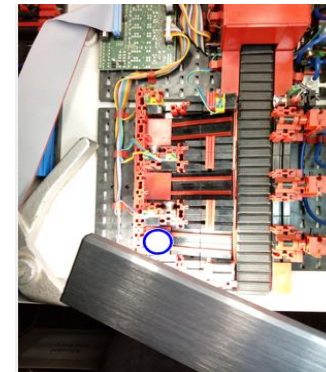
An initial literature review found that the Hough Circle Transform could be used to detect circular objects in an image. Videos were taken of the factory in motion. Several image processing techniques were then applied, including automatic thresholding, edge detection and HSV. However the detection success rate was not adequate for the blue and red cargoes. This issue was solved using additional lighting.



HSV frame

## Results

Image processing techniques resulted in a low success rate for red and blue cargoes. Adding more lighting meant that all three colours of cargo could be found with a success rate of  $\geq 80\%$ .



Blue cargo found in crane bay



Adding more lighting

## Conclusions

Machine vision could be used to track cargo moving through a factory. However the additional expenses required to implement this system may prove restrictive.