

ANNie – The Sorting Robot

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Features

- Recognizes color of objects in all lighting conditions
- Uses Artificial Neural Network (ANN) to “learn” colors and detect them
- Sorts objects based on color

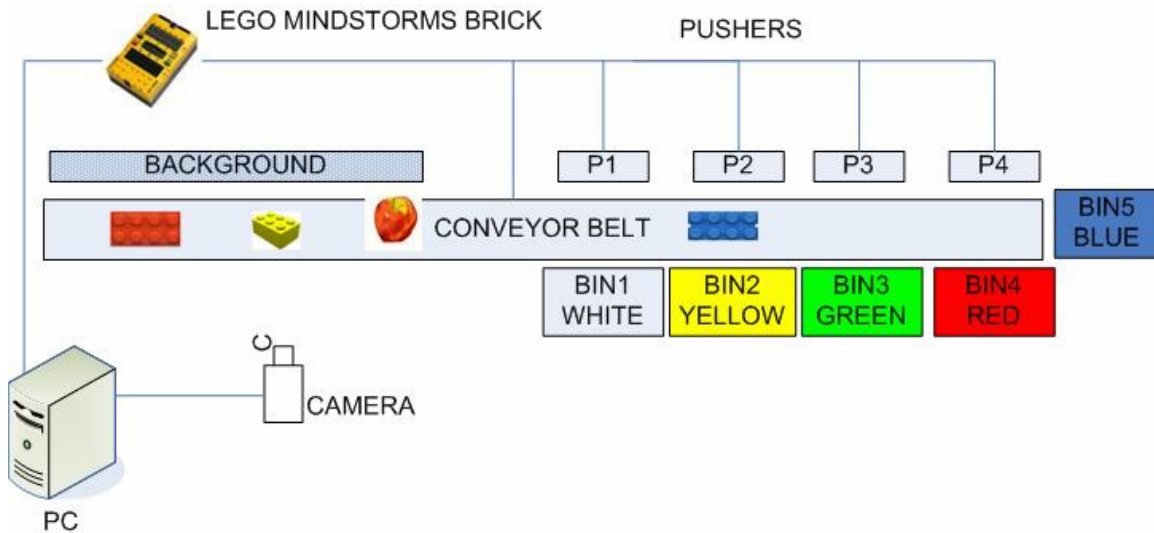
What is Artificial Neural Network (ANN)?

It simulates human neurons in the brain. It is a collection of nodes (neurons) that interconnect in such a way that they can adapt to new learning. ANNs can solve some very complex problems that ordinary techniques cannot.

Learning Color

A child learns color by having a parent point to an object and say “this object is of yellow color” or “this is green.” After a while, the child notices the pattern and learns the color. The same learning process can be done with robots. You can use ANN to teach the robot a given color. After showing it many images of given color, the robot learns that color.

Robot Design



The figure above shows the design of the robot. The LEGO camera takes pictures of the object on the conveyor belt. The image is sent to the PC which performs image processing using ANN. The color of the object is decided. Command to place the object in an appropriate bin is sent to the LEGO Mindstorms brick. The brick controls the pushers and the conveyor belt. There are 5 bins for objects of 5 different colors: white, yellow, green, red and blue. Pusher Px pushes an object into the corresponding bin. If the object color is blue, no pushers are activated.

Status

Not completed (Work in progress)