



# Intelligent Sorting Machine

Zhan su, Taiting lu, Runqi Yuan  
Professor Keyue Smedley  
Department of Electrical Engineering and Computer Science

## Project Goals

This project is aiming to design and build a Robotic Arm which is able to pick and place items on the table and sort them by color and shape.

- The robot arm is based on XYZ system and powered by 3 closed-loop step motors.
- The image processing part includes a web camera and a computer. The camera will detect color and shape of items and give feedback to the robot arm how to move each item.

## Timelines

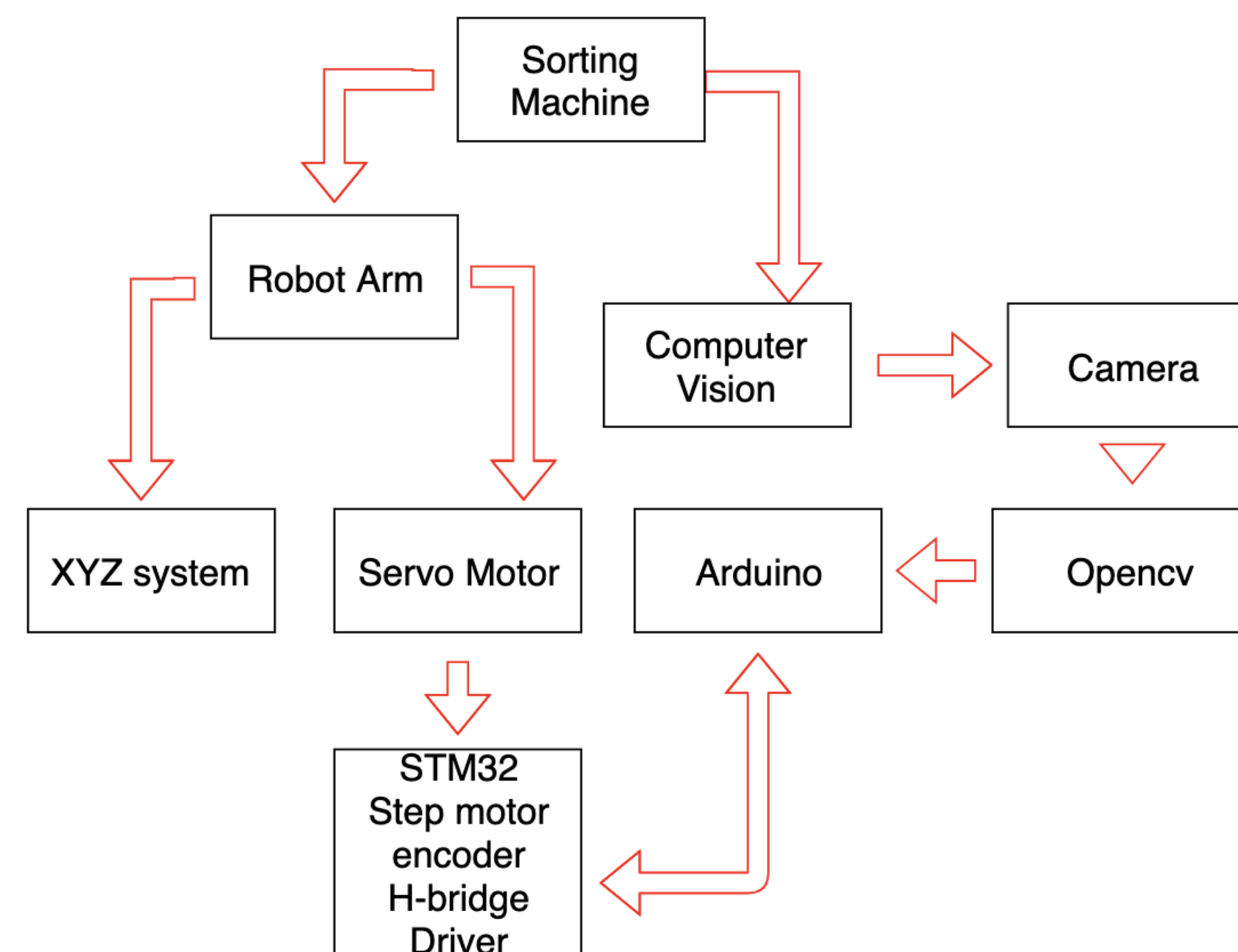
### Winter Quarter:

- Week 1-3: Installing OpenCV and building frame.
- Week 4-7: building whole sorting system including software part and hardware part.
- Week 8-10: Testing sorting machine

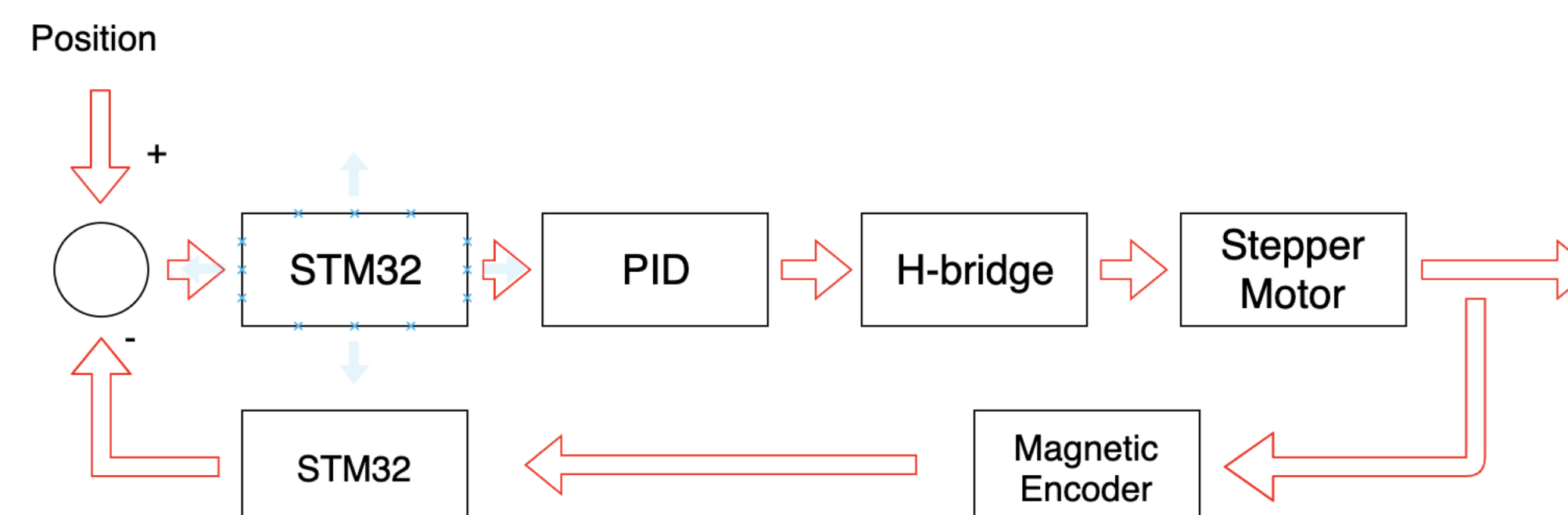
## Machine Design



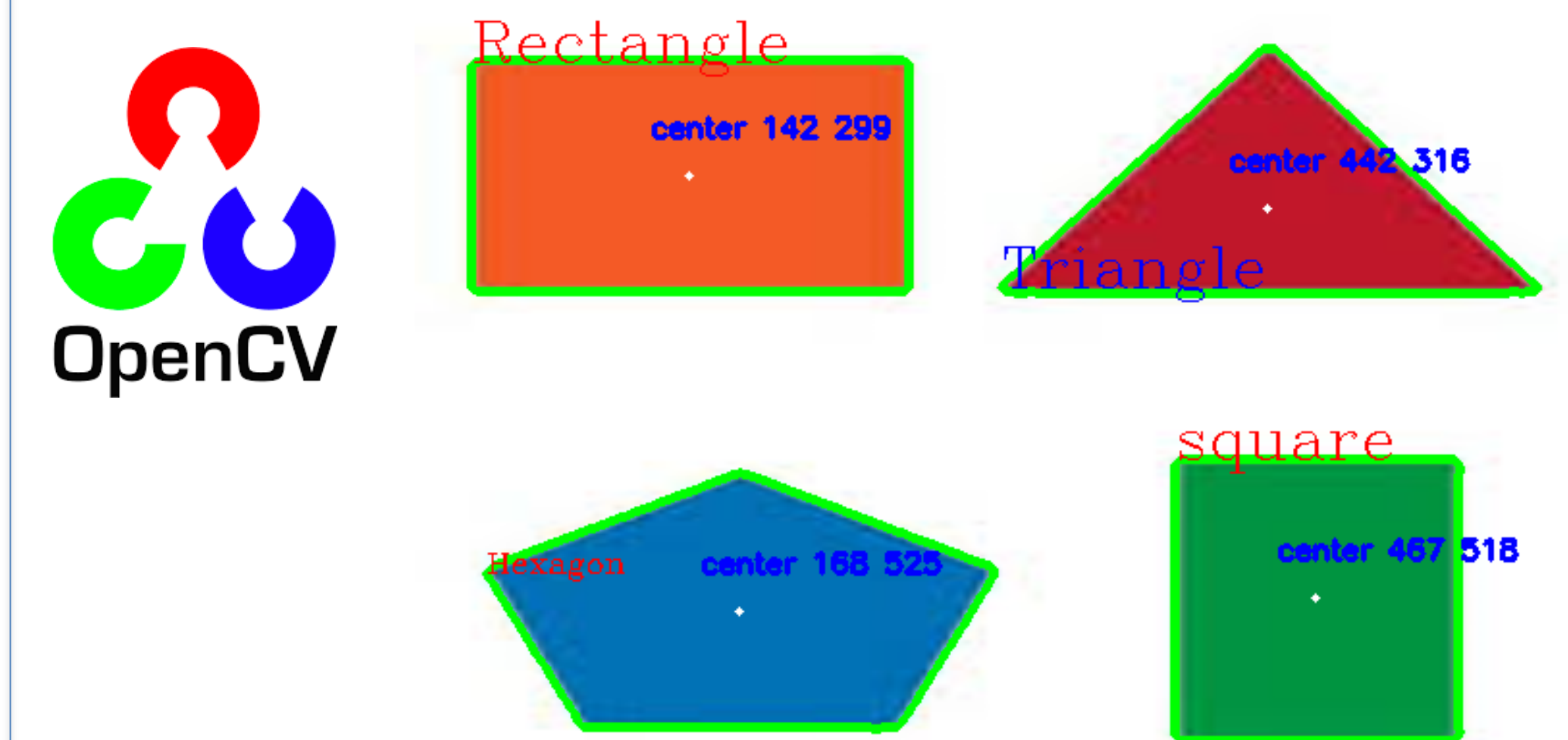
## System Diagram



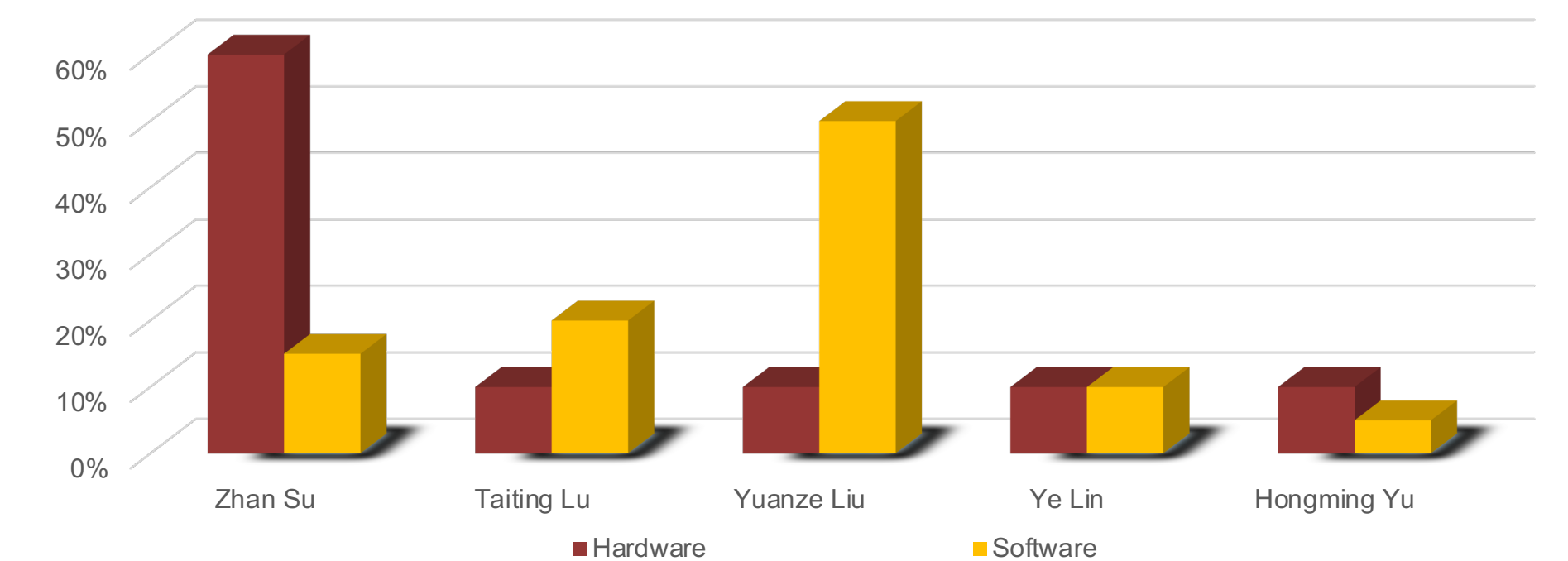
## Motor Diagram



## OpenCV



## Responsibility



## Reference

- *Introduction to Servo Control & PID Tuning* by Motion Engineering Inc
- *Series in Computer Vision: Volume3 Computer Vision in Robins and Industrial Applications* by Dominik Sankowski & Jacek Nowakowski