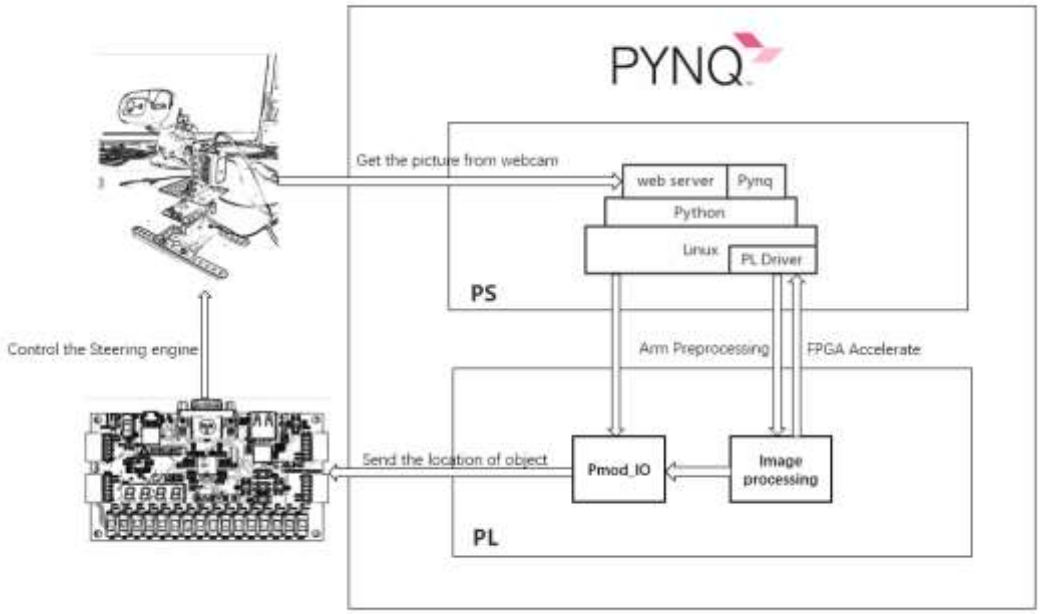
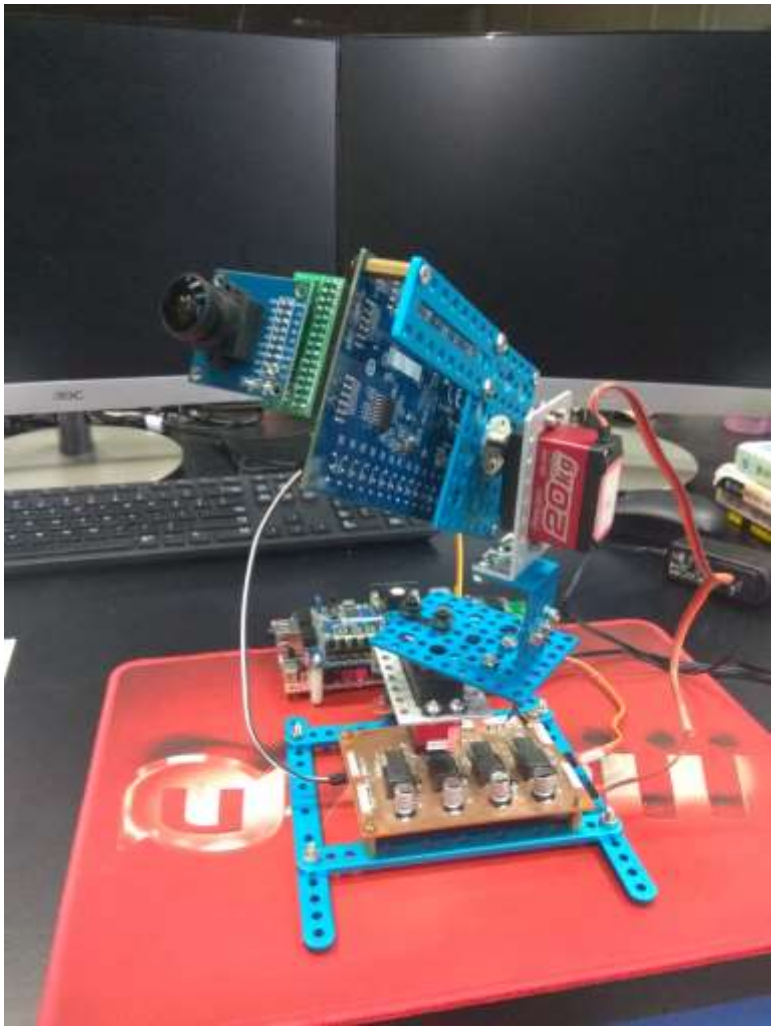
Object tracking system

This is an object-tracking system. PYNQ-Z2 and BASYS3 serve as Data-Processing board. An OV7670 camera is used to obtain image data in real-time and a usb camera is used to complete object feature initialization before system starts working. The system is driven by two motors. In our system, we used ARM core to build a friendly user interface in PYNQ-Z2, and acceleration algorithm is used in BASYS3's FPGA.

Before working, we can see user interaction interface in hdmi screen drived by PYNQ-Z2, obtaining the image of the object waiting to be tracked, getting the object feature information and send it to BASYS3. After that, BASYS3 will get the image data provided by OV7670 and identify the object through a series of image recognition algorithms. Finally we reached an identifcation speed of 30fps. The movement system is controlled by PID algorithm, BASYS3 gives the PWM signal to control the two motors and drive the camera to track the object in real time.

In our Demo, we used small balls to serve as the objects to be identified, and the balls can be smoothly and stably tracked by our system.

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