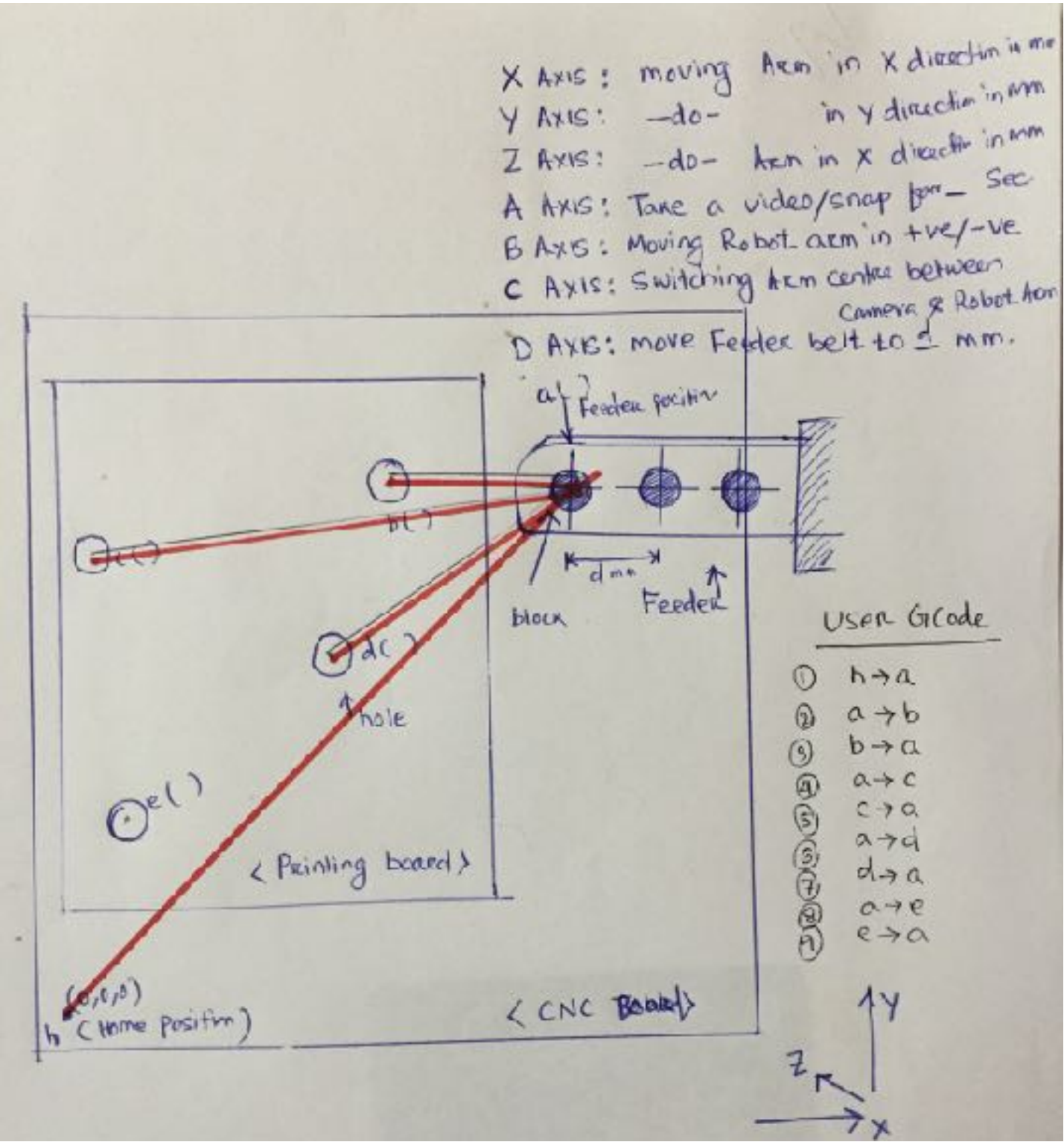


OpenCV-Python Pick and Place Gcode Controller



*Gcode is a Text command to move Arm in x-y-z axis, example:
G0 X10 Y15 Z20 stands for moving the Arm in 10 mm x, 15 mm in y and 20 mm in z direction

| Step | Business Scenario | Technical description | I/P from Master program | Serial Gcode * O/P to Master program |
|--------------------------|--|--|---|--|
| <input type="checkbox"/> | Move Machine ARM from Home (h) position to Feeder position (a) | Read first line of User GCode File, move the Arm | Get a OK from Master program after move is successful | Send the GCode for X and Y axis to Master program |
| <input type="checkbox"/> | Take a Snap/Video of Feeder position. Calibrate the distance between Arm centre & block centre | Trigger Axis A to take a Snap/Video for – sec and run the OpenCV program to calibrate the distance in x mm & y mm.build the Gcode and send to the Master program | Get a OK from Master program after move is successful | - Trigger Axis A for – mm - Send the Correction Gcode |
| <input type="checkbox"/> | Pick the Block from Feeder position | - Trigger Axis C to switch from Camera centre to Arm centre - Move Z axis to particular height for block picking. - Trigger Axis B to pick the Block - Flag a variable status as 'Pick' - Move Z axis to back to home position. - Trigger Axis C to switch back to Camera centre - Move the Trigger Belt Axis D for next pick up | Get 6 OK confirmation from Master program after successful axis move. | - Send Gcode for C Axis - Send Gcode for Z axis - Send Gcode for B axis - Send Gcode for Z axis - Send Gcode for C Axis - Send Gcode for D Axis |
| <input type="checkbox"/> | Move Machine ARM from position a to position b (for placing) | Read 2nd line of User Gcode File , move the Arm | Get a OK from Master program after move is successful | Send the GCode to Master program |
| <input type="checkbox"/> | Take a Snap/Video of Feeder position. Calibrate the distance between Arm centre & hole centre | Trigger Axis A to take a Snap/Video for – sec and run the OpenCV program to calibrate the distance in x mm & y mm.build the Gcode and send to the Master program | Get a OK from Master program after move is successful | - Trigger Axis A for – mm - Send the Correction Gcode |
| <input type="checkbox"/> | Place the Block in desired position (b) hole | - Trigger Axis C to switch from Camera centre to Arm centre - Move Z axis to particular height for block placing. - Trigger Axis B to place the Block - Flag a variable status as 'Place' - Trigger Axis C to switch back to Camera centre - Move Z axis to back to home position. | Get 5 OK confirmation from Master program after successful axis move. | - Send Gcode for C Axis - Send Gcode for Z axis - Send Gcode for B axis - Send Gcode for Z axis - Send Gcode for C Axis |
| <input type="checkbox"/> | Repeat the Steps (2-7) for position c,d,e etc | | | |