

# System Requirements

1. **Customer Requirement:** The system should be fast.  
Engineering Requirement: The system must be able to draw faster than 4 inches per second.  
[Video link](#)
2. **Customer Requirement:** The system must be accurate.  
Engineering Requirement: The system must be able to draw a 10 inch straight line +/- .25 inch. This includes both the overall length of the line and ensuring the line does not vary more than .25 inches of being perfectly straight.  
[Video link](#)
3. **Customer Requirement:** The system needs to be inexpensive and manageable to manufacture.  
Engineering Requirement: The robotic arm will use a SCARA topology, with two rotating joints to control arm actuation.  
[Video link](#)
4. **Customer Requirement:** The system must have a commonly known interface.  
Engineering Requirement: Controlling commands will be input as G-code commands. These commands must be made available within the Python or MATLAB GUI.  
G0, G1, G90, G91, G20, G21, M2, M6, M72.  
[Video link](#)
5. **Customer Requirement:** The system must use different types of writing tools.  
Engineering Requirement: Upon receiving an M6 command the machine operator must be able to mount a crayon, pen, or pencil within 15 seconds.  
[Video link](#)
6. **Customer Requirement:** Add a 'copy' feature  
Engineering Requirement: Use computer vision to extract the primary lines from an image and generate the G-code. 9/10 people will be able to recognize the zoomed drawing from a lineup of 5 possible source drawings.  
[Video link](#)
7. **Customer Requirement:** Be able to draw from the computer  
Engineering Requirement: Use the GUI to allow the user to draw in a canvas in order to make custom drawings instead of using just presets. Must be recognizable by 9/10 people compared to the original drawing.  
[Video link](#)