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](#)