

Questionnaire:

For different 3D printing materials and 3D printing processes:

Q.1 What material works with which type of 3D printing process?

Q.2 Is this 3D printing process work on our current robot?

Q.3 If purchased a better robot, will you be able to design and build the above 3D printing process?

| <b>Printing material metrics</b>                                | <b>Chosen material (metal, plastic, composite, etc.)</b> |
|---|--|
| Material cost per length or per area                            |  |
| Material availability   |  |
| Material tensile strength                                       |  |
| Material compressive strength                                   |  |
| Material reaction to different materials/environments           |  |
| Safety gear for operator/human while working with this material |  |

For delivery/printing mechanism on above chosen process:

Q.1 What different components does the above 3D printing process need?

Q.2 How can one build it and is it feasible for our current robot?

Q.3 What is the strength of the entire system?

Q.4 How many wires and connections points are present?

Q.5 What different materials can be used to make this system? Apply the above table metrics to this material selection as well.

| <b>3D printing mechanism metrics</b>             |
|--|
| Weight of entire system                          |
| Weight of mechanism held at the end of robot arm |
| Number of connections                            |
| Different components and number of each of them  |