Project Proposal

Legend:
Original Proposal
Updates Sep 25th, 2019, by June

Big Picture

What is the overall problem that this and related research is trying to solve?
Why should people care about the problem?
What is the general approach to solving this problem?
How will this approach result in a solution?
What is the value of this approach beyond this specific solution?

Create and include one or two graphics that capture and communicate the problem and proposed solution to technical but non-expert audiences. Can you create a one or two sentence summary of the problem and the proposed solution approach?

The overall problem is that normally, people can't (are difficult to) intuitively see whether the item they are going to own (purchase, design, or manufacture) fits the aimed space before they actually, physically have the item at hand. It might be easier for items with regular shapes (like cubical or spherical) to be estimated, but that doesn't happen often, and people still need to manually measure the space and the item, and have some spatial imagination to know if things fit the space.

People would care about the problem when they are purchasing new items for a limited space, especially when these items are inconvenient to transport, move or return, such as large pieces of furniture. It would be even more disturbing when these items are transformable, because they need to know whether the space would be enough in all the transforms of the item.

Generally, people would manually measure the space beforehand (usually treat the space and the item both as cubes), go to the furniture store, and purchase the item whose size in all three dimensions (as a cube) is smaller than the space. This approach could make sure the item won't squeeze the space too much, but also, it's hard to make the most of the space. There would almost always be extra

The goal is to see the real world while design 3D fabricable furniture using interactive and easy-to-learn gestures.

Specific Project Scope

What subset of the overall problem are you addressing in particular?
How does solving this subproblem lead towards solving the big picture problem?
What is your specific approach to solving this subproblem?
How will we know that this subproblem has been satisfactorily solved?
What is the value of your solution beyond solely solving this subproblem?

#TODO

Related Work

What foundation and fundamentals need to be known in order to understand your problem, approach, and solution?
What work has been done before on this specific problem?
What are related problems that have been addressed?
What work has been done on those related problems?
How does this past work contribute to your proposed solution?

Be sure to cite all potential sources, and summarize each one in terms of its content and relation to your project.

#TODO

Goals, Deliverables, Tasks

Recursively break down the proposed project starting from the highest level specifications spanning a complete 1-2 term period down to individual atomic steps spanning days to at most a week. At each level of hierarchy, specify:

- *What goals do you need to achieve?*
  - *What are the specific questions that you will answer?*
  - *What skills / abilities will you enable?*
- *What deliverables will you produce to indicate that the above goals have been achieved?*
  - *These must be specific, concrete nouns.*
  - *How do these deliverables prove that the goals have been met?*
- *What tasks are necessary to generate those deliverables?*
  - *These must include specific, concrete verbs.*
  - *These often generate goals at the next lower level of hierarchy.*

- *Be sure to include dependencies --- which goals are necessary to have completed before starting each task?*

Distill the entire hierarchy into a list of weekly milestones. What will you need to achieve by when in order to attain your goal for the end of the project on time?

Goals

1. #TODO

Deliverables

1. #TODO

Tasks and Tentative Deadlines

#TODO

References (to be updated)

[1] #TODO