The Idea

The Interactive Mechanism Wall is a museum exhibit that children can play with to learn about basic mechanism design. The motivation behind this exhibit is drawn from several insights on mechanical engineering design:

- Given the same set of materials, different people can come up with wildly different solutions
- A lot of mechanism design is based on experience—once you build something, it becomes part of your “toolkit” that you can reference when creating new designs
- Looking at examples of other people’s work can be very helpful for your own designs—actually building them yourself is even better
- Documenting work is painful, and for that reason, a lot of useful work is not shared with others

The Interactive Mechanism Wall addresses these insights by creating an environment for children to test out their own designs as well as try out designs created by other children. The museum-goer is challenged to guide a ball from one point to another by creating a Rube Goldberg contraption. The user does this by placing tangible magnetic pieces (similar to Fridgits) onto the wall that can direct the ball to the “finish” point. The start and finish points of the challenge are projected onto the wall. Tangible pieces allow multiple users to get involved, which may result in collaboration and social interaction.

Using object recognition, the wall automatically remembers the placement of pieces that led to a successful design, i.e. one that brings the ball to the finish line. In other words, the software builds a library of successful designs as more and more users interact with the wall. If a user gets stuck, he can press the “help” button, and shadows of a previous configuration show up on the wall. The user can then place the objects onto the screen and see why that particular design
works. Since the start and finish points are projected, it is possible to have different levels so advanced users can attempt to solve a more difficult playing field.