# Capstone Project Proposal

## SmartBoard Physics Game

### Background

The team will build a physics game app for the smartboard platform. This app will allow the users to create an interactive simulation of the physical properties of elements (like water, heat, fire) and their interaction with each other. The project will take advantage of the Unity game engine, its accompanying physics engine, and the Smartboard touch interface. The users will be able to create their own scene by putting together different elements and visualize the result as the scene responds to the laws of physics like gravity, convection etc.

### Statement of Work

The application will support the following features.

1. Be able to display physically correct behavior of rigid objects, and also objects with various real life properties such as elastic, plastic, liquid and gas.
2. These materials can be portrayed using points, crosses, balls, or shaders that are selectable during a session.
3. Allow correct display of heat and cooling being applied to the selected objects.
4. Allow walls to be built so the materials interact with them.
5. Make a rotating solid that can spin appropriately.
6. Allow the materials to be added through an inflow and an outflow point that is selected
7. Fuel can be added as well as the capability to create a fire which consume the fuel and interact with the objects (e.g., heating water to gas).
8. Cooling property can be added to cool the objects (e.g., freeze the liquids).
9. Objects will be displayed and will operate with and without gravity.
10. Gravity can be turned on or off during a run.
11. This application can be operated from a single page control panel containing the display of the events and the controls.

Keywords : Unity 3D, PhysX, Touch interface, Smart board, 3D graphics, physics simulations.

### Mentor Information

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