# Project Proposal


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**Project Outline.**

The project that we have decided to implement is a ping pong game interface using the TIVA board and Orbit Booster Pack. The basic idea of the game is to put the ball past the opponent's paddle. The players will control two paddles using joysticks, but if we are not able to acquire the necessary hardware, we will implement a non-trivial amount of code for a server on the board to handle input from an app (Blynk) on the players' smartphones.

**Software Components**

- A portion of the program that handles game logic and game state including the angular direction of the ball, current score, victory/loss conditions evaluation, etc.
- A graphics engine that continually draws and redraws the paddles and the ball on the screen in a way that most accurately reflects the current game state and player action.
- A module that reads and handles input from the joysticks, restricting the joysticks' movement to a single axis.
- If necessary, a WiFi server on the board for the Blynk app on the players' mobile phones to connect to. Ideally, this server should act as a stand-in for the joystick control module, i.e. it should pass all the same parameters to the main program that an equivalent hardware joystick control module would.

**Hardware Components**

- TIVA C-board.
- Orbit Booster Pack.
- Two Pmod JSTK2 2 axis joysticks connected via Pmod connector.
- TI LaunchPad CC3100BOOST WiFi BoosterPack *(if necessary.)*
- Two mobile phones *(if necessary.)*

**Anticipated challenges**

- Getting input from the player in a snappy and responsive manner so that the controls do not feel "laggy"
- Drawing and redrawing the paddles and the ball on the screen in a manner that reflects the player's actions
- Implementing the algorithm for determining the direction the ball travels when acted upon by the player
- Designing the program in such a way that it runs using minimal memory and that it doesn't crash.
- Implementing a server to handle input from the Blynk apps on players' smart phones (*this will only be necessary if we are not able to acquire the joysticks in a reasonable time frame)*