

## **6.111 Final Project Abstract: Interactive Vertically-Scrolling Shooter**

Weijie (Jeff) Yuan and Danny Vo  
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This project aims to recreate the classic videogame Galaxian on the FPGA hardware. The original Galaxian game was released in 1979 by Namco. The gameplay consists of the player's ship situated at the bottom of the screen as it attempts to destroy hordes of aliens flying in formation above. Occasionally, the aliens will swoop down in a kamikaze attack in an attempt to destroy the player. Because of possible limitations of the FPGA, the number of enemy aliens may be reduced in number from the original game. To compensate for this, we may implement more sophisticated enemy behavior patterns to keep the game challenging.

In addition to implementing the game, we want to build an innovative control scheme. We want the player's ship in the game to be controllable by hand gestures. This can be accomplished by using a camera to capture the player's hand movements, and use video processing techniques to convert them into appropriate movement coordinates in the game.

In our preliminary examination of the project, we have identified the following task areas. The name of the person assigned to work on each module follows in parenthesis:

- Game logic, the FSM (Jeff)
- Game art, bitmaps (Jeff)
- Controller, labkit buttons, and keyboard (Jeff)
- Controller, hand motion sensing, video processing (Danny)
- Enemy behavior and animation (Danny)
- Collision detection (Danny)