

# All Invaders Are Belong To Us

## CSEE 4840 Spring 2011 Project Proposal

Sanat Apte<sup>\*</sup>, Mashooq Muhaimen<sup>†</sup>, Rahul Parikh<sup>\*</sup>, Yibin Sun<sup>\*</sup>

<sup>\*</sup>Department of Electrical Engineering  
<sup>†</sup>Department of Computer Science  
School of Engineering and Applied Science,  
Columbia University in the City of New York

{sa2832, mm3858, rtp2119, ys2522}@columbia.edu

### **Abstract**

The objective of this project is to build an embedded system that mimics the classic arcade game *Space Invaders*. This project will utilize both hardware and software capabilities of the Altera DE2 board. The implementation will involve a combination of C and VHDL. We plan to use a PS2 keyboard as our game controller. We will be using 3 primary keys (left/right for movement and space for fire). We are hoping that the skills we pick up from Lab3 will help us design the graphical interface of this game.

### **Description**

Space Invaders is a 2D game in which a player attempts to shoot rows of space invaders as they approach the home planet. The player shoots at the invaders using a spaceship that can only move horizontally. The player spaceship can hide behind bunkers to avoid enemy fire. If the player survives one wave, he is faced with another wave. The waves get progressively more difficult, where difficulty is defined by speed of movement. In our rendition, we plan to limit the number of waves to a small number in the range of 5 to 10. We also plan to implement a point system where the player is awarded points for each invader s/he kills. The player will have multiple lives.