E4840 EMBEDDED SYSTEM PROJECT PROPOSAL

Real Boxing

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1. Introduction

For this project, I aim to implement a boxing game via FPGA Cyclone board and its peripherals such as VGA monitor and USB keyboard. This simple game could be a good practice for my embedded system knowledge since it combines both hardware and software design. In the game, players could control their boxers through USB keyboard and interact with AI boxer through VGA monitor. Players could do left, right punch as well as left, right block. Once a boxer's health bar runs to the bottom, the game is ended and his opponent wins.

2. Software and hardware design
a) Software: The software part is designed for most of the logic control tasks. This includes controlling boxers' state changing intervals, deciding health losing of boxers, and ending condition settings.
b) Hardware: In this part, I need to implement the drivers for keyboard and VGA monitor. In more detail, the driver for keyboard should read in key press, interpret into high level action instructions and send to controller. And the driver for VGA monitor should wait for commands from monitors and display.

3. Milestone

a) Set up the overall architecture of the game, then build the interface between hardware and software.

b) Write and debug hardware part: VGA monitor and keyboard drivers.

c) Implement logic control design. Test system performance and make improvement.