

On 1 June 2012, two final year CPE students (Hoo Chin Hau & Koay Zi Hao) under the supervision of Assistant Professor Akash Kumar participated in the OpenHW competition in Beijing. The motivations behind the competition are to drive Xilinx based technical innovations, promote the use of FPGA devices in embedded systems and encourage the development of open source hardware community. In the competition, students have the freedom to demonstrate any designs that leverage of the advantages provided by a Xilinx FPGA device.

Our students presented a soccer system that was run on multiple FPGA boards. One of the boards is responsible for the physics of the soccer game, and rendering of the players and soccer field. The physics calculation is done by soft core processor (Microblaze) while the rendering is performed by a custom hardware core that implements a subset of the features provided by graphics engine of the Super Nintendo gaming system. The other boards handle the artificial intelligence of the soccer players. Communication among the boards is done through Ethernet. The soccer system demonstrates how real time constraints of the soccer system can be satisfied by leveraging on the potential of a Xilinx FPGA device and carefully designing the hardware and software components. It is also invaluable in the teaching of real time embedded system courses, which are known for their diverse and multi-disciplinary nature. According to the feedbacks from the students of EE4214, the soccer system proved to be a fun and rewarding project.