

EMBEDDED SYSTEMS PROJECT PROPOSAL FALL 2004

PROJECT: Mudd Rover

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The project we'd like to undertake is essentially a simple version of the Mars Rover. We want to control a robot using the Xilinx board that will roll around the room and take pictures with an attached webcam. The pictures will then be transmitted back to the board for display on the VGA output.

For the robot we plan on using the Lego MindStorm which downloads a control program to the robot itself from the Xilinx board via an infrared controller attached to the USB output on the FPGA. The images are sent back to the FPGA via a 15ft USB cable connected to the webcam.

The task here is twofold. First we need to implement a control program for the robot. Once implemented the control program will be downloaded to the robot via infrared. As a result the robot will not be controlled in real time rather by a set program.

The second task is processing the images to the VGA. For this we need to watch our memory size to ensure that we can effectively transmit the images to the screen. This will probably be implemented in hardware on the FPGA to transfer the incoming signal to a usable output for the VGA display.

A tricky problem that will have to be dealt with is the manipulation of two signals over the USB port. If we can use a hub that can switch inputs easily, then this can be handled well.