Ele700 / ELE800: Project Design 2004/2005

Topic:

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Estimated cost: $ 250	*Project rating: Complex*	*Date:* September 2004

Title: **SECURITY SYSTEM WITH BINOCULAR MOVING OBJECT LOCATOR**

Preamble:
Recent high-end security systems allow automatic recognition of moving objects and filming their activities. However, in many cases it is necessary to know an exact location of the moving object. It gives unique ability for 3D-tracing of the object's path and capturing digital photo only on those moments when object reaches specified locations. For example, system can detect and photograph only those persons who comes to the cashier's desk ignoring moving persons are walking to the other directions.

Objective:
Develop and design security system with binocular video acquisition module with ability to recognize moving objects and locate their positions. System also should be able to capture video-frame in on-board SRAM and transmit it to the host-PC via parallel port.

Partial specifications
This is a team project for two students and can be divided in two parts:

1. Development of dual CCD digital camera video-capturing board with PC-interface;
2. Development of GUI, application software for captured picture presentation and pointed object distance calculation.

- Use CMOS digital camera with embedded video-A-to-D converter
- Use PIC 16c877 RISC controller for video-capturing board;
- Utilize parallel port for PC interfacing;
- Use Visual Basic or JAVA for GUI and image displaying software development.

Suggested approach:
- Conduct literature survey on video acquisition, JPEG format and USB LANs
- Design and built the low-cost video capturing module based on RISC-controllers and CPLD;
- Develop GUI and display software for Windows PC platform;
- Integrate the hardware and software components and test complete system.