**Stereo Vision Implementation**

- **Image Acquisition: Cameras**
  - OV3620: 8 megapixel
  - OV7710: Automotive, 320 x 240, 1/4" sensor
- **Camera Housing**
  - Mounted in Solidworks
  - SLA Rapid Prototyping
  - High Flex ABS-like plastic
- **PIC – 18F2550**
  - Used for SCCB
  - E2G Microcontroller
  - C-Compiler
  - Price: $5
- **Xilinx Spartan III FPGA**
  - Up to 1.6M system gates
  - From 56 to 734 I/Os
  - Embedded 18x18 Multipliers
  - Xilinx Spartan III: $12 million gates
  - Optimized for low cost consumer applications
- **Software**
  - C++ Dll captures data from FPGA
  - Gets most recent complete data set
  - Delivers left camera image, disparity image
  - Python script displays, stores data
  - Images update as fast as PC allows
  - Can store images on host PC
  - Time stamping

**System Pricing**

- **Current Platform**
  - Quick USB, ~$150
  - Camera development kit, ~$200 ea.
  - New horizons FPGA board, ~$450
  - Cables, proto-boards, etc. ~$100

- **Large Quantity**
  - Cameras: $15 (Qty 10K)
  - FPAGAs: $50 (Lq. Qty)
  - USB Cypress Chip: $8 (Qty 1K)

**Similar Products**

- Videro Stereo on a Chip
  - 30 fps @ 640x480, ~$1,400
- Point Grey Bumblebee
  - 30 fps @ 640 x 480, ~$1,995
- Tyx Deep Sea
  - 30 fps @ 512 x 480, ~$10,000

**Timeline, Next Steps**

- Explored existing stereovision options
- Identified and tested algorithms
- Programmed algorithm on FPGA
- Obtained, interpreted, and provided camera data through USB
- Refinement of algorithm
- Calculate distance from disparity
- Optics optimization (lens, registration)
- Technology demonstration
- Integration of multiple camera pairs
- Technology transfer