Laser Pointer Mouse

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Introduction

Objective: To control a mouse on a projected screen with a laser pointer

- Buffer Video Input
- Initialize Image Processor
- Locate Laser Pointer
- Send mouse events through PS/2 to computer
High-Level Design

Camera

ADV7185

27 MHz

Process And Store Camera Data

Image Processing (find pointer)

Synchronize

reset_sync

global

esync

dsync

csync

Store Drawn

draw

Draw

S-Vid input

S-Vid output

dx

dy

S-Vid output

dx

dy

to computer

PS2 Interface

Mouse

Circled inputs from wireless

reset

enable

draw

clear

left

right

X

9

Y
Process and Store Camera Data

Camera Input

27 MHz

ADV7185

20

YCrCb

27 MHz

Dual BRAM

256k x 12

CLKB

CLKA

YCrCb to RGB

enable

RGB

reset_

sync
global

Address

RGB_out

ADDRA

ADDRB

DOUTB

addr

18

12

reset
Image Processing and Initialization Block Diagram

- **Corners**
  - Corner locations
  - To video processing
  - To all

- **Finder**
  - Video
  - X, Y

- **Sum/Average**
  - X, Y

- **Address Controller**

- **Render**
  - Find A
  - Apply A
  - X', Y'

- **Address**

- **27 MHz**
- **Reset**
- **Enable**
- **Initial**

- To mouse move
PS/2 Mouse Interface

Control FSM

Packaging (muxes)

Serialization (shift reg)

De-serialization

Clock Manager

dx  dy  buttons

Clock bus

Data bus

~10 KHz

27 MHz