



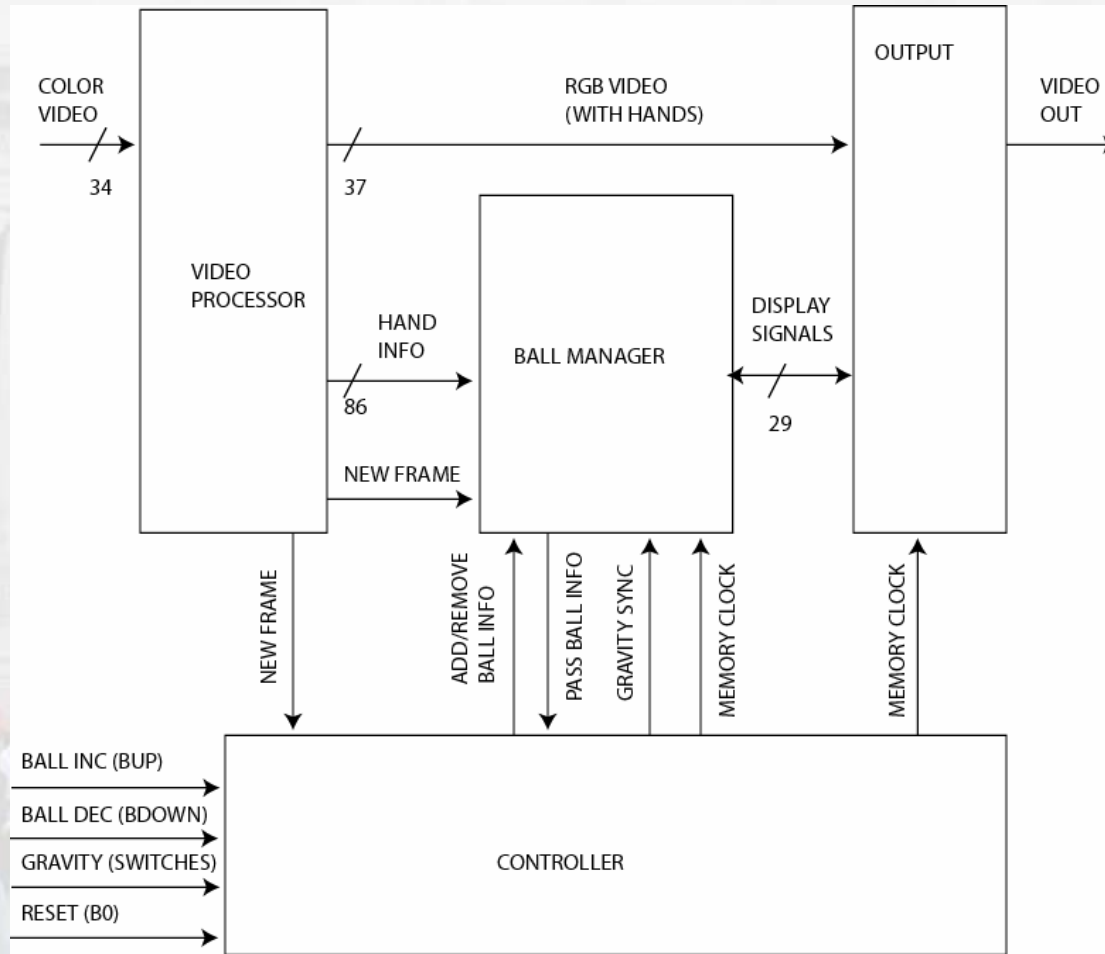
Virtual Juggling

Chris Wilkens
and
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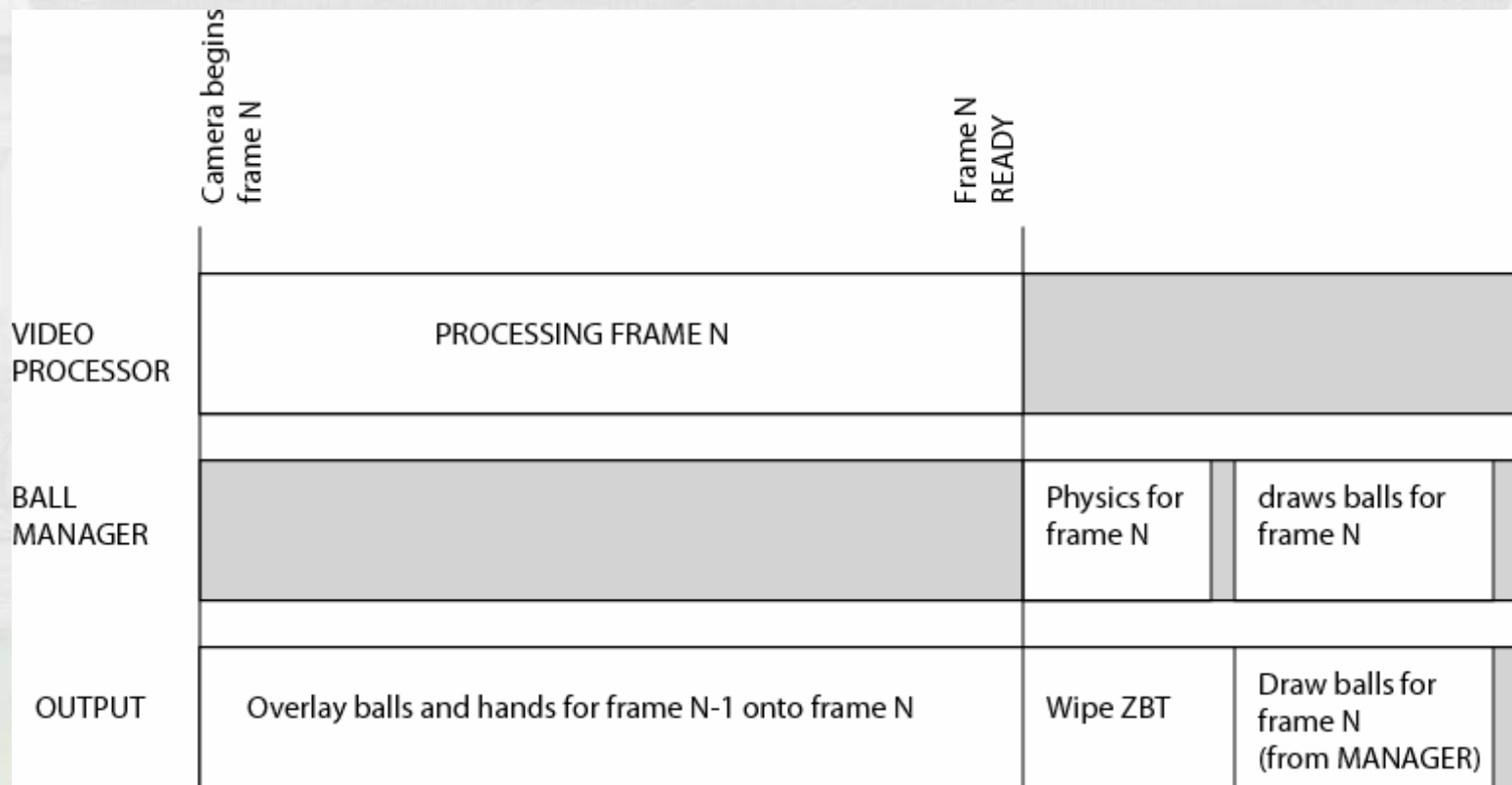
System Overview

- Juggling simulator
- Camera captures user's motions
- User moves hands to juggle virtual balls
- Balls obey laws of virtual physics
 - » Anyone can juggle with us
- Display shows user and virtual balls

System Overview



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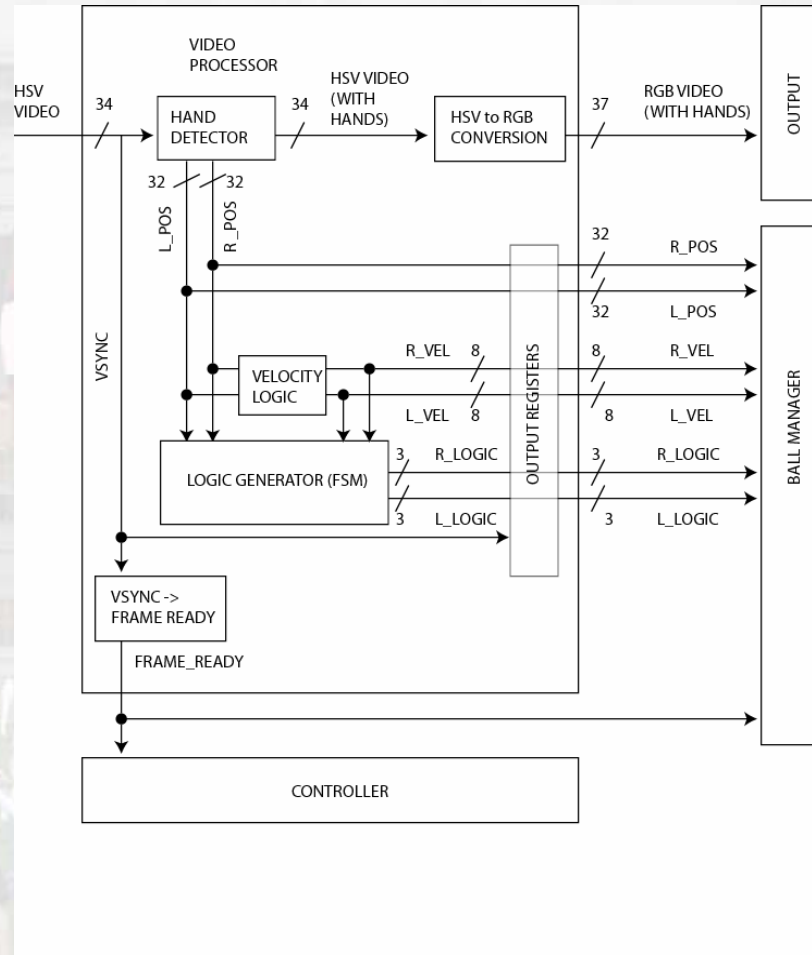
Controller

- Synchronizes user input to modules
 - Reset
 - Gravity
 - Ball Increment/Decrement
- Generates and delegates memory clock for ball manager and output modules

Video Processor

- Finds hands of juggler by locating specially colored blobs on screen
- Computes position using center of mass
- Computes running velocity
- Generalizes position and velocity to logical motions of throw and catch

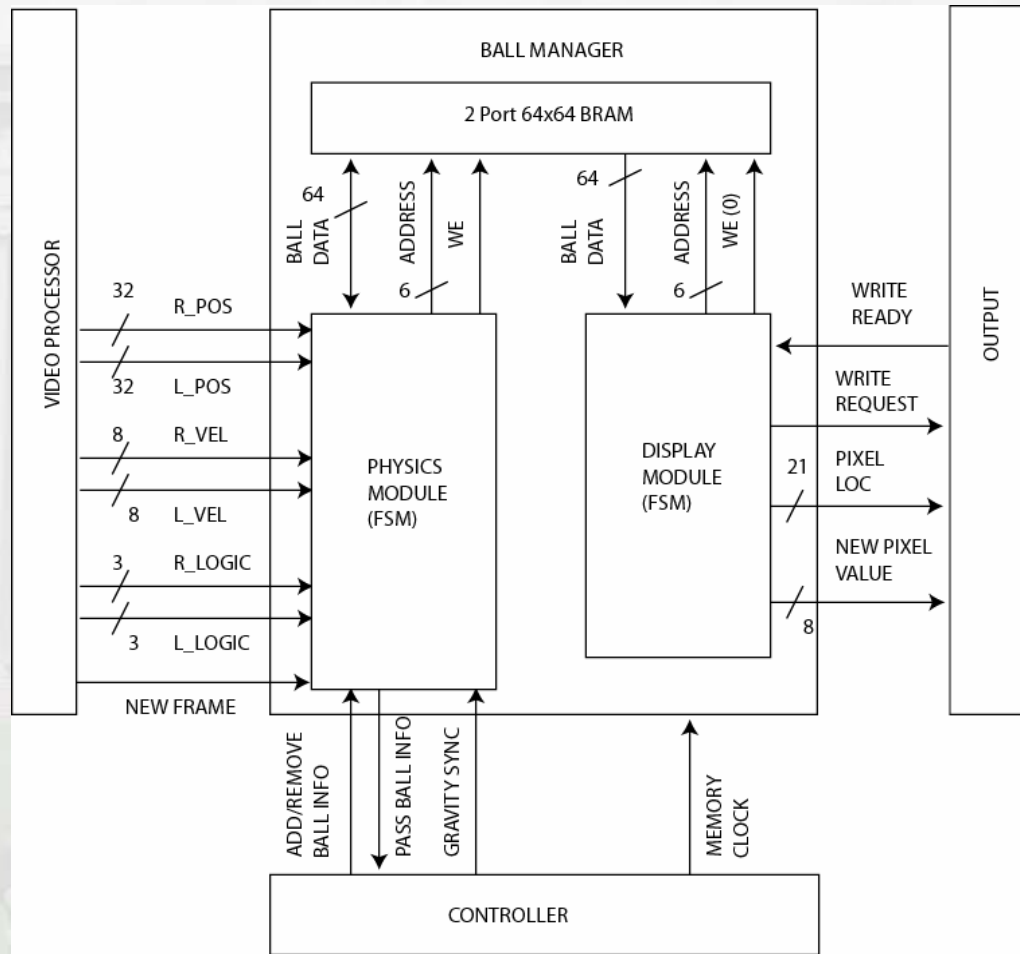
Video Processor



Ball Manager

- Computes and stores location and velocity of balls
- Keeps track of balls' states
- Calculates pixel value and location for balls
- Sends pixel locations and color values for balls to ZBT memory

Ball Manager

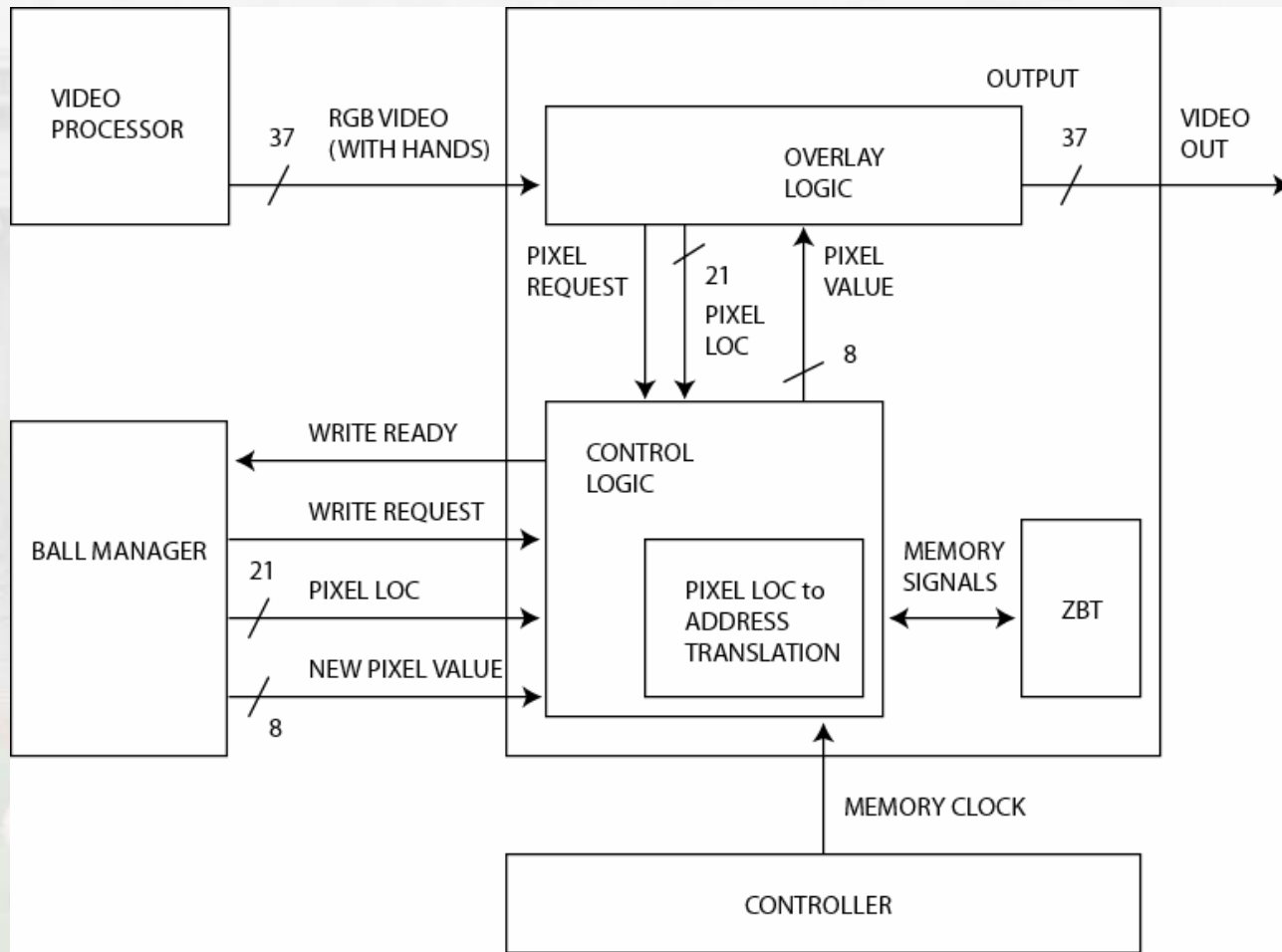


Output Module

- Receives camera image as RGB video
- Overlays ball and hand information stored in ZBT buffer



Output Module



The image shows a faded background of the MIT building, a large neoclassical structure with a prominent dome and a portico supported by columns. The words "MASSACHUSETTS INSTITUTE OF TECHNOLOGY" are visible on the frieze above the columns. In front of the building, a group of students is gathered on a lawn, some holding sticks and flags, suggesting a group activity or performance. The entire scene is overlaid with a semi-transparent white filter.

Questions?