

# MIT

## Dance Dance Revolution



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\* Image source: <http://www.konami.jp/am/ddr/ddr3rd/chara/charatop.html>

# Introduction to DDR

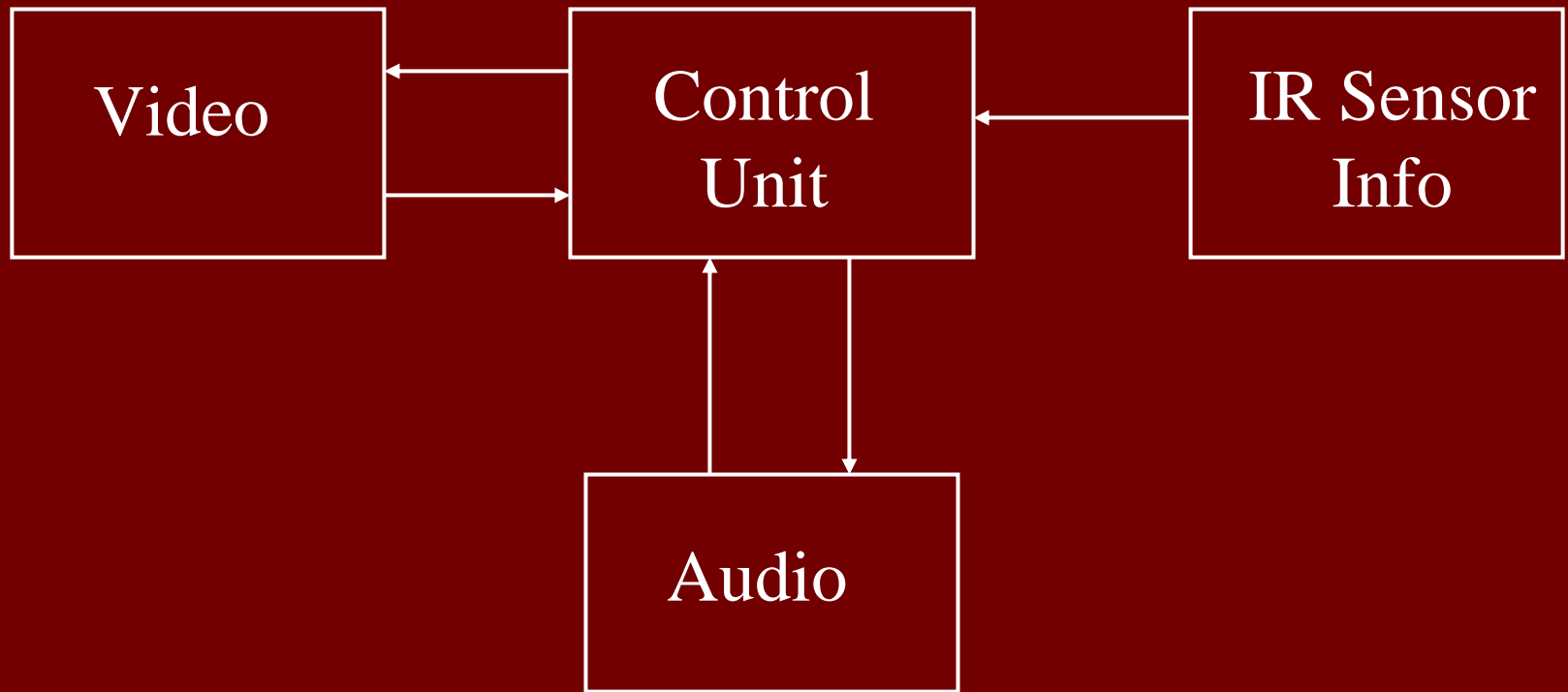


- Foot – eye coordination
- Hit arrows when they match up on screen
- We use IR sensors
- One song, 3 difficulty levels

# Game Overview

- IR Sensor Info
  - determines location of user's feet
- Control Unit
  - controls game flow
- Audio
  - handles song representation as arrows and audio playback
- Video
  - produces display viewed by user

# Data Flow



# Video ~ Menu Screen

## MIT Dance Dance Revolution!

**Song: Mr. Roboto, Styx**

**Difficulty Level:**

**Easy**

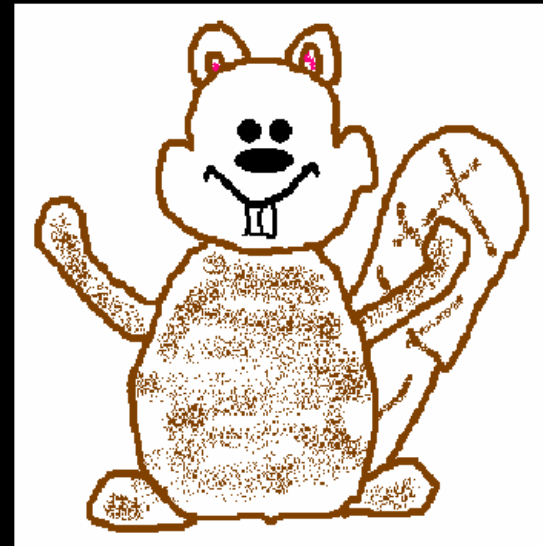
**Medium**

**▶ Hard**

# Video ~ In-Game Mode

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Difficulty Level



Accuracy Level

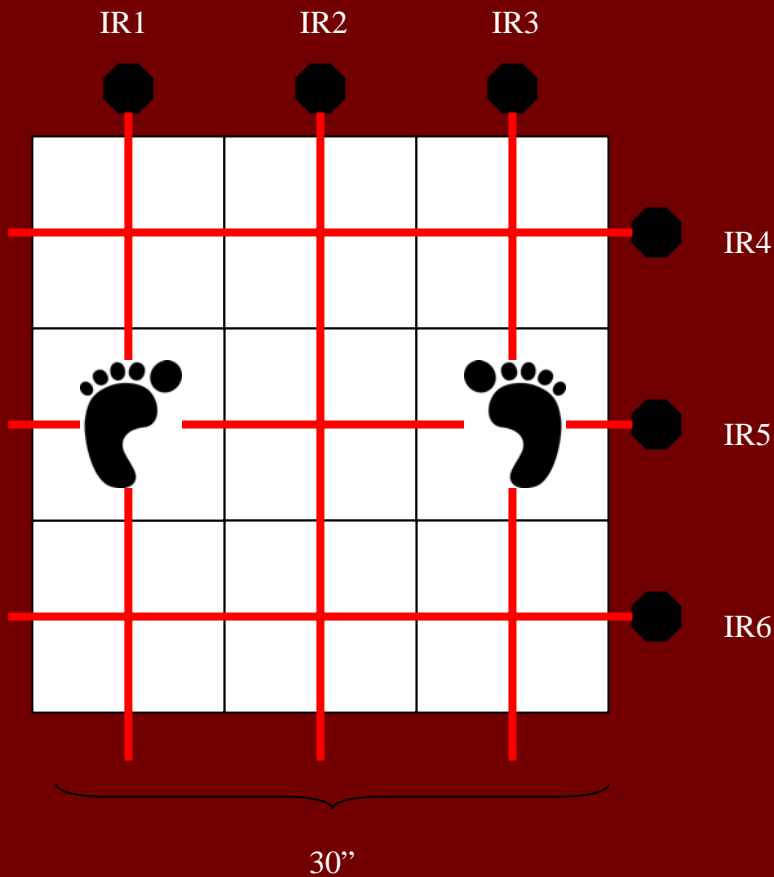


# Video ~ End-Game Mode

**Game Over!**

**Your Rating: A+  
Great Job!**

# Infrared Sensors



## ■ Setup:

- 3x3 grid of sensors allows location of foot to be found

## ■ Hardware:

- Sharp GP2Y0D02YK IR Sensor - 31" Trigger ([hobbyengineering.com](http://hobbyengineering.com))

- Produces digital output indicating if beam is interrupted

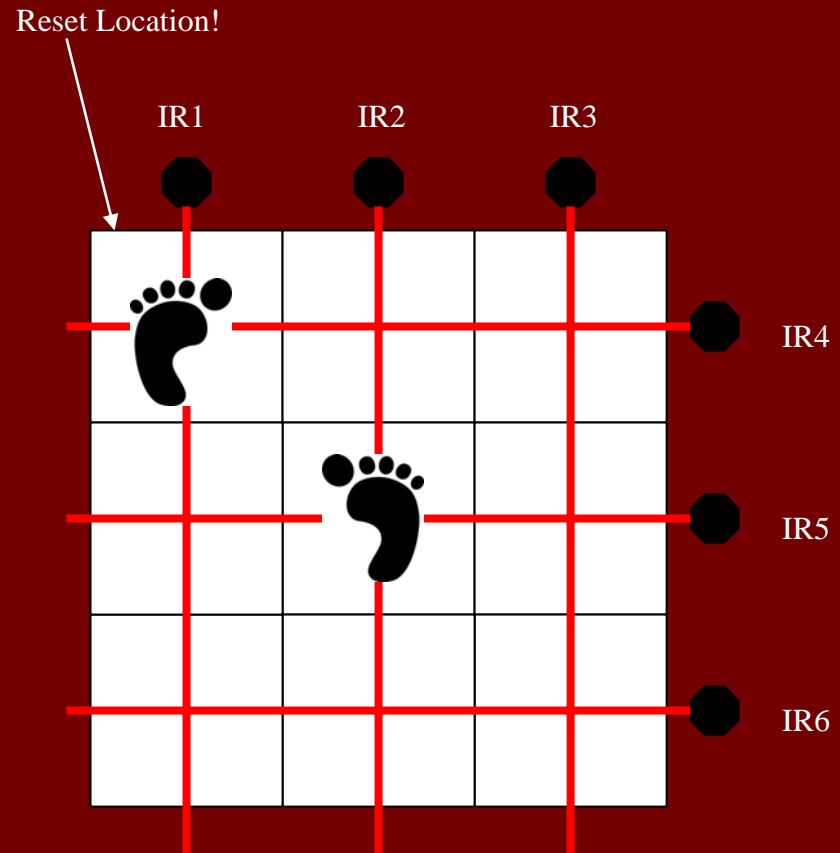
## ■ Considerations:

- Delay due to wires and the IR trigger device



# Control Unit

- Two main functions:
  - Game mode
  - Scoring
- Game mode:
  - Sends a 2-bit signal to determine mode
- Scoring:
  - Calculates score based on how close arrows are when position is reached
  - Accuracy level displayed during game, overall score given at end.



# Audio

beat	row
1	0101
2	1000
n	1001

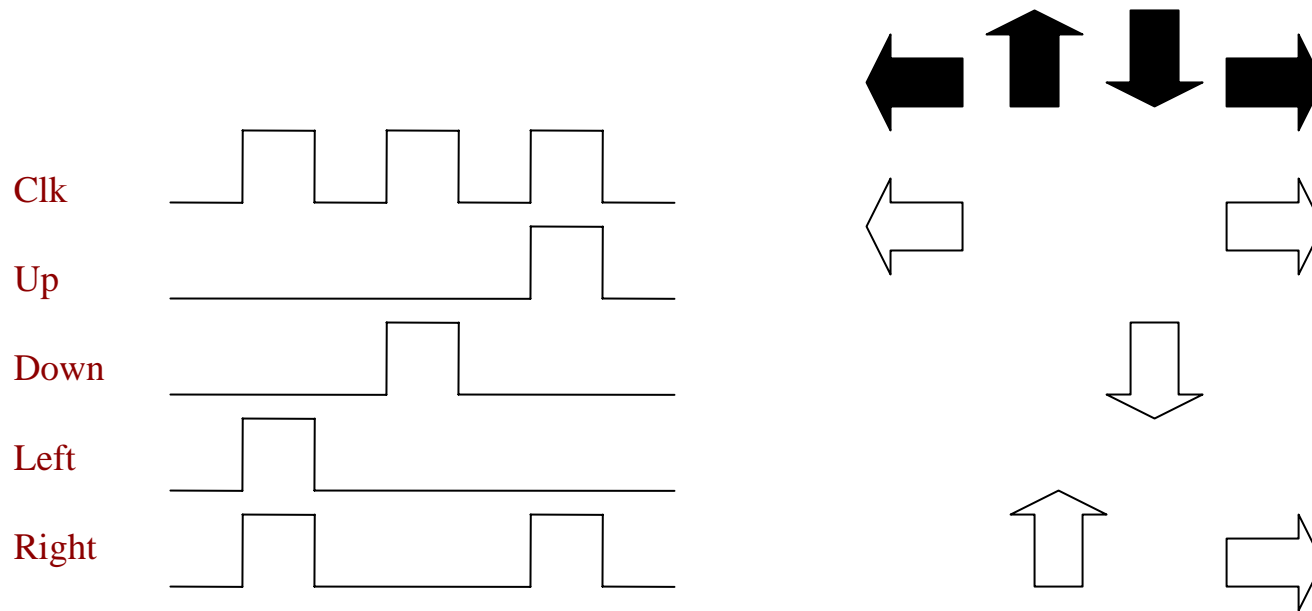
## ■ Audio Playback

- Song stored in ZBT memory
- Played through speakers using AC'97 codec

## ■ Representation of song as arrows

- Row of arrows represented as a 4-bit number
- Each row corresponds to a beat of the song
- [left arrow, up arrow, down arrow, right arrow]
- If arrow represented by a 1, then it will appear in the row

# Song Sample



# The End!

- Any questions??

