

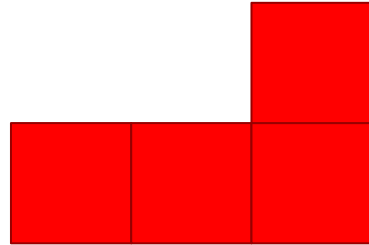
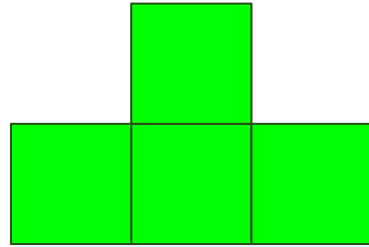
# Spectris

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Jose Salazar  
Alfredo Yáñez  
Benny Zhang

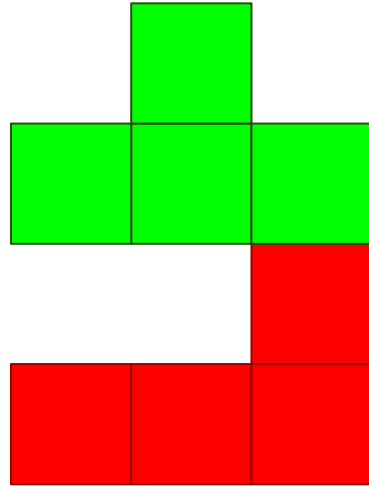
# Like Tetris, but harder

- Collision is based on RGB!
- Lines are cleared when white



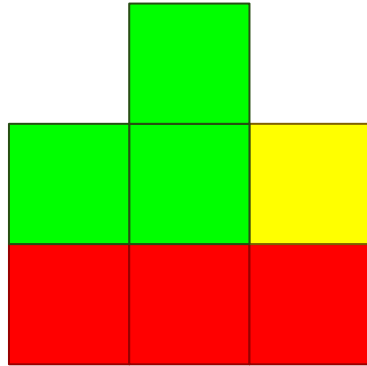
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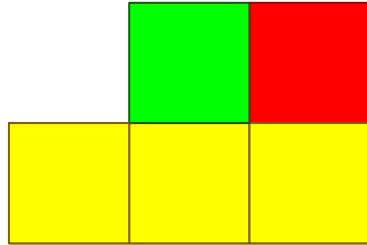
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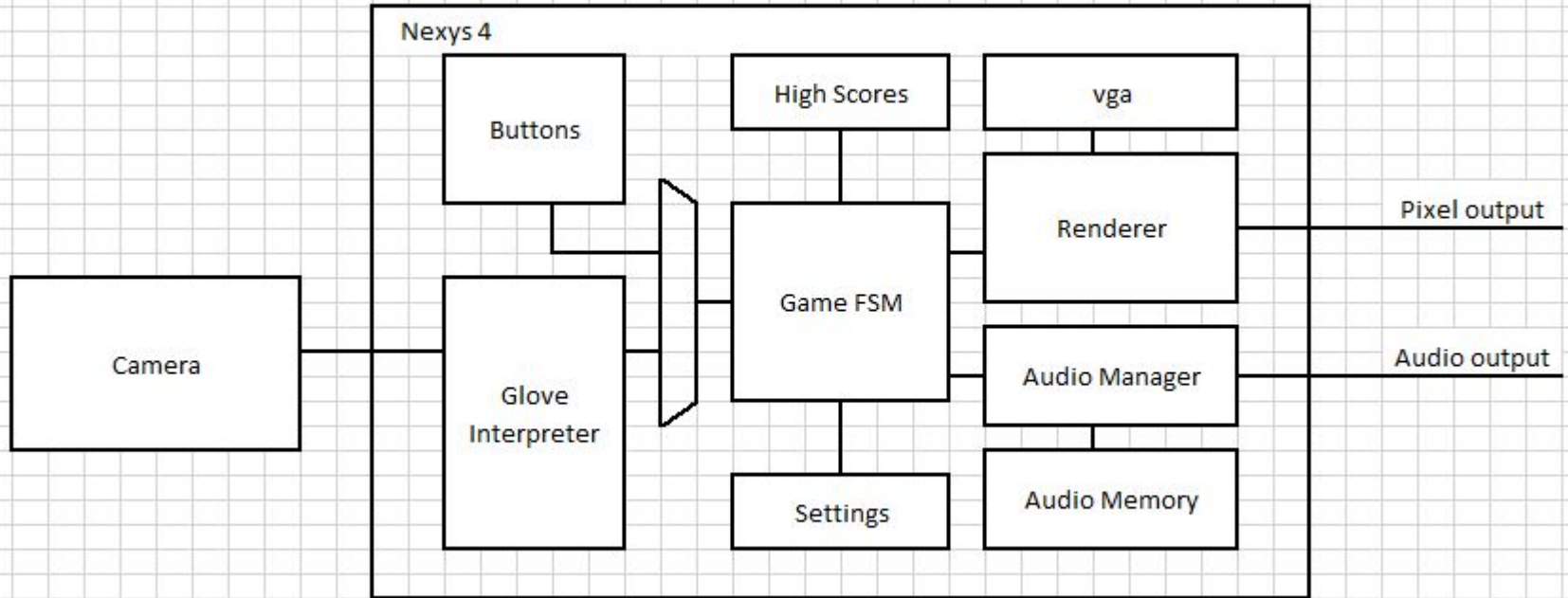


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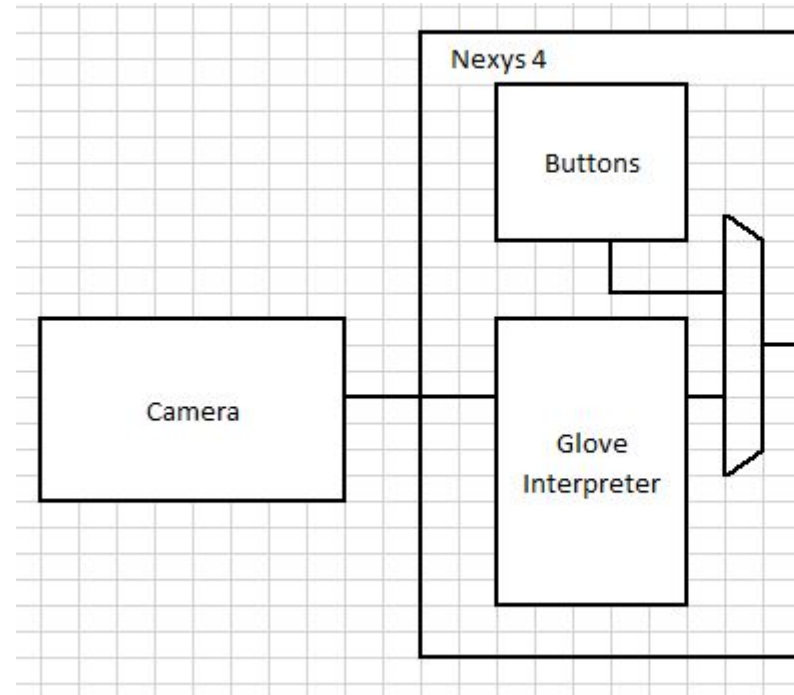


# High-level Diagram



# Input

- Nexys 4 Buttons
- Glove controller
- Hardware maps to game inputs



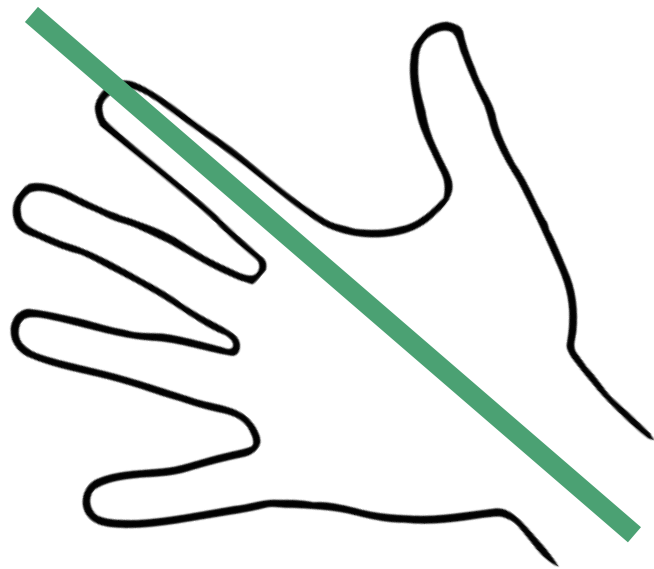
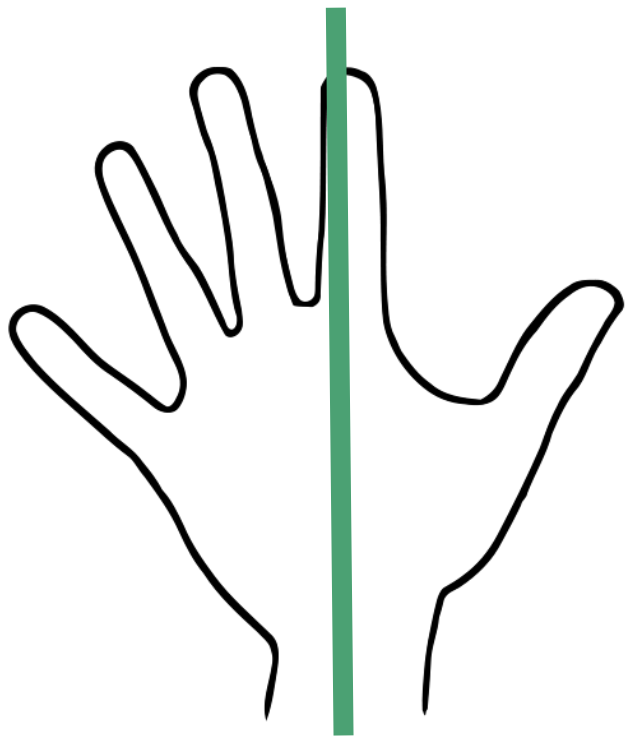
# Glove controller

- A glove is read by a camera - gestures converted to game inputs
- A camera tracks the position and angle of the player's hand
- The camera will either track the player's hand or a glove the player will be wearing
- We will have two forms of inputs.
  - 1) Game controller
  - 2) Gesture control

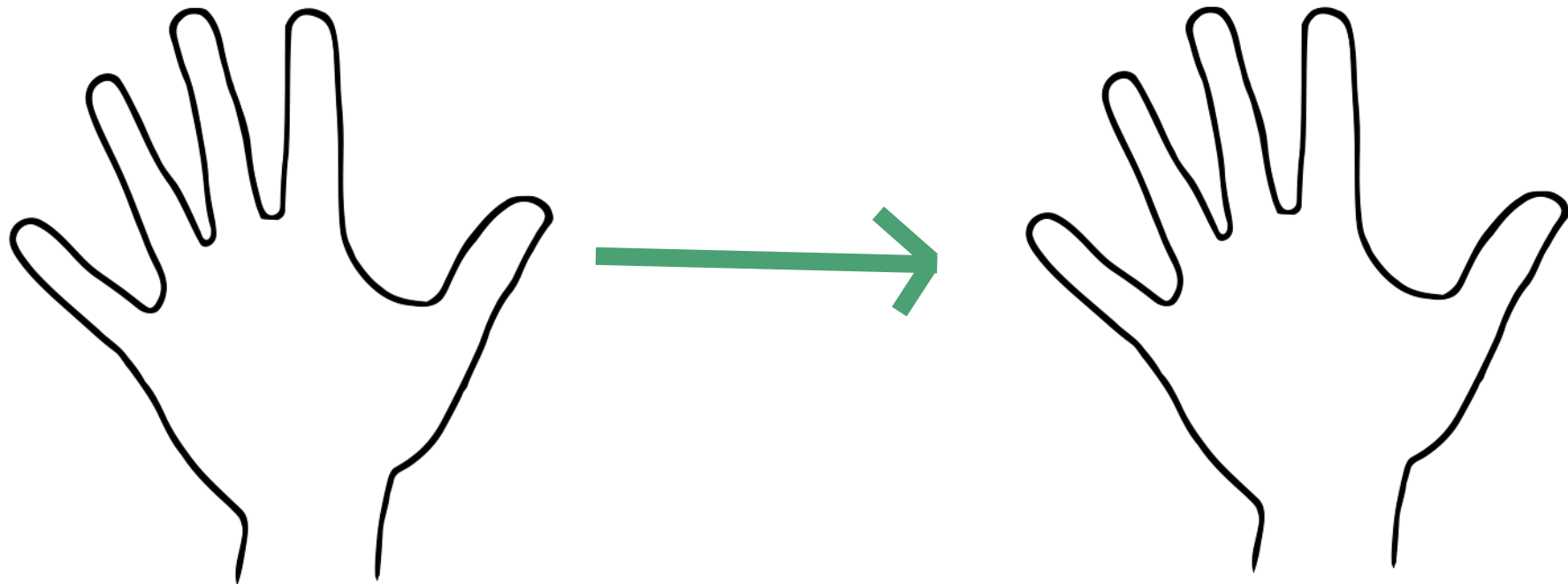
Both will output the same bits for the same control scheme making it easy to test.



# EXAMPLE GESTURES<sub>s</sub>

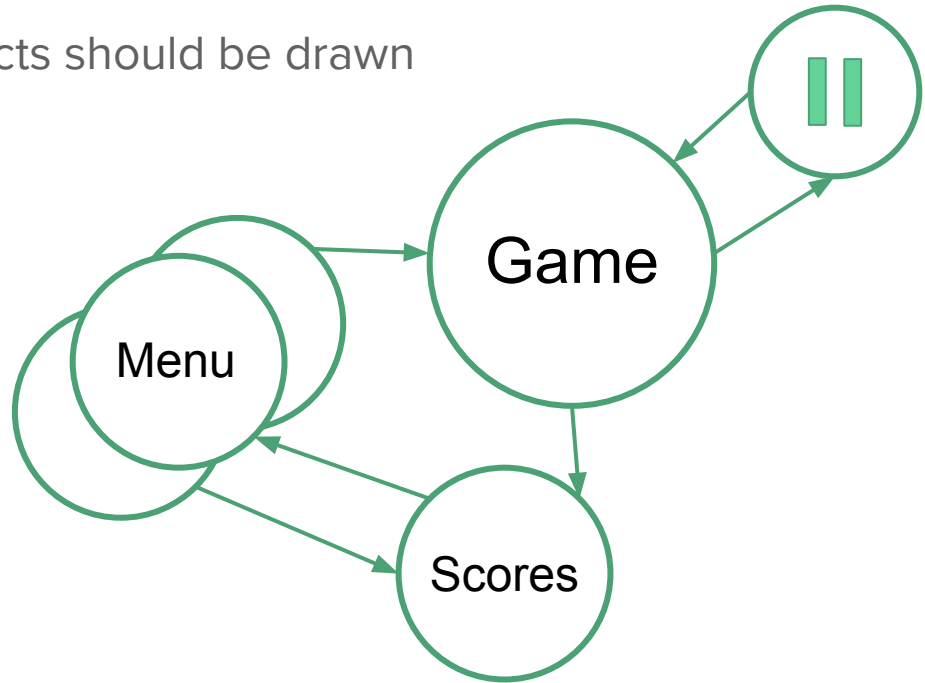


## EXAMPLE GESTURES<sub>s</sub>



# Game FSM

- Menu navigation
- Determines which static objects should be drawn

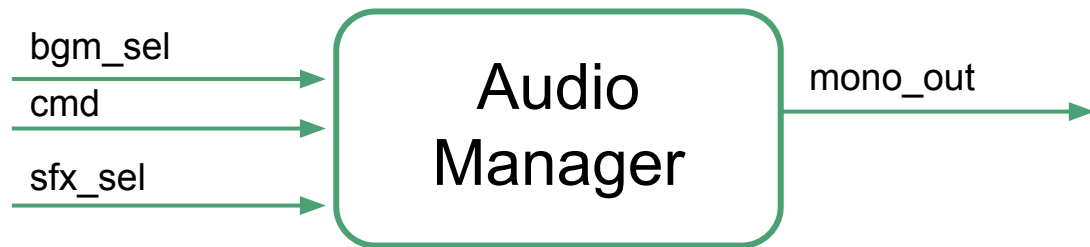


# VGA video output

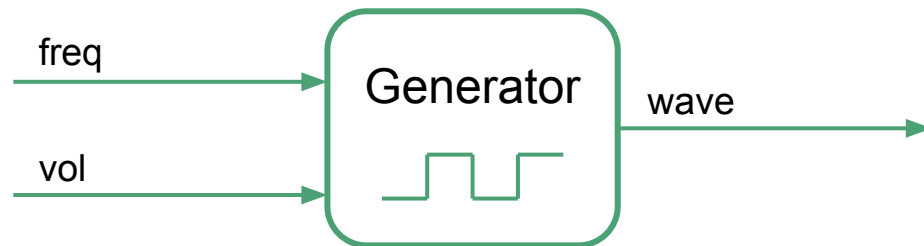
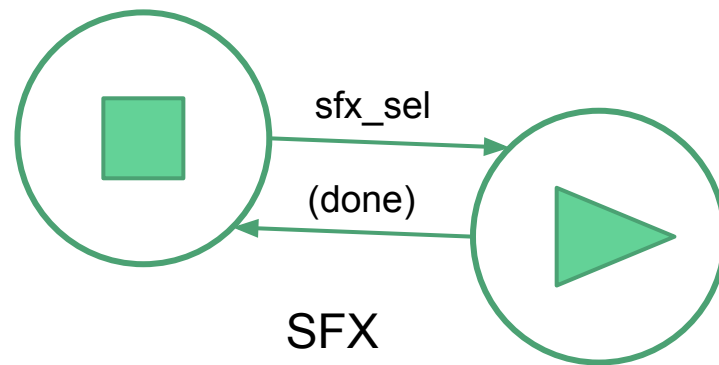
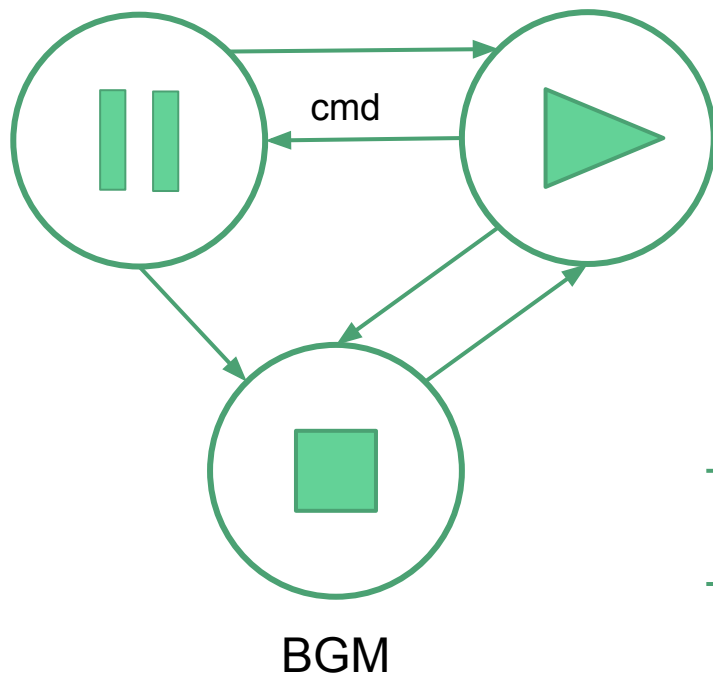
- On menus, draws static objects
- In-game, renders a buffered game canvas + the active Tetris block on top

# Audio output

- Generated, not played back
- Music / SFX stored as commands for the audio system's wave channels
- Each code is 11 bits: [ 7' pitch | 4' volume ]
- 4 channels: 2 square waves, 1 saw wave, 1 triangle



# Audio Components



# Project Goals

## Basic goals:

- Basic Tetris gameplay
- Spectris game mechanic
- VGA, mono audio bgm/sfx

## Core goals:

- Glove controller
- Secondary features of Tetris
- Speed-up audio
- Improved visuals

## Stretch goals:

- Misc. gameplay additions
- Other control schemes
- More reactive audio
- Color-blind mode
- Difficulty modes
- High scores
- Improved visuals

# Timeline

Task	11/7	11/14	11/21	11/28	12/05
Specs	█				
Audio		█	█		
Glove		█	█		
Game		█	█		
Rendering			█		
Integration				█	█
Fine tuning					█





