Robot Unicorn Attack
Bringing the Game to Life
Flying Pegasus Ground Attack

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System Overview

Camera → Object Recognition

Graphics → Game Logic → Game Output
Camera

- Nexys4-DDR OV7670 Camera
- VGA 640x480 resolution
- Tracks hand motion
- RGB2HSV
Object Recognition

BRAM \rightarrow Video frames \rightarrow Filter \rightarrow Hand coordinates

Motion \rightarrow Motion signal

Flight \rightarrow Attack

Camera \rightarrow Object Recognition

Graphics \rightarrow Game Logic \rightarrow Game Output
Game Logic

Controller

Environment

Obstacles

Pegasus

Attack pixel

Sound effects

Collision signal

Attack hit signal

Obstacle pixel

Environment pixel

Attack pixel

Attack

Game Logic

Game Output

Graphic

Object Recognition

Camera
Sprite Storage

- Load background image to BRAM one column at a time
- Pre-load sprites in BRAM
Game Output

- Video to the monitor
- Audio to the speaker

Diagram:

1. Camera
2. Object Recognition
3. Graphics
4. Game Logic
5. Game Output
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FLYING PEGASUS GROUND ATTACK
Make your wishes come true!