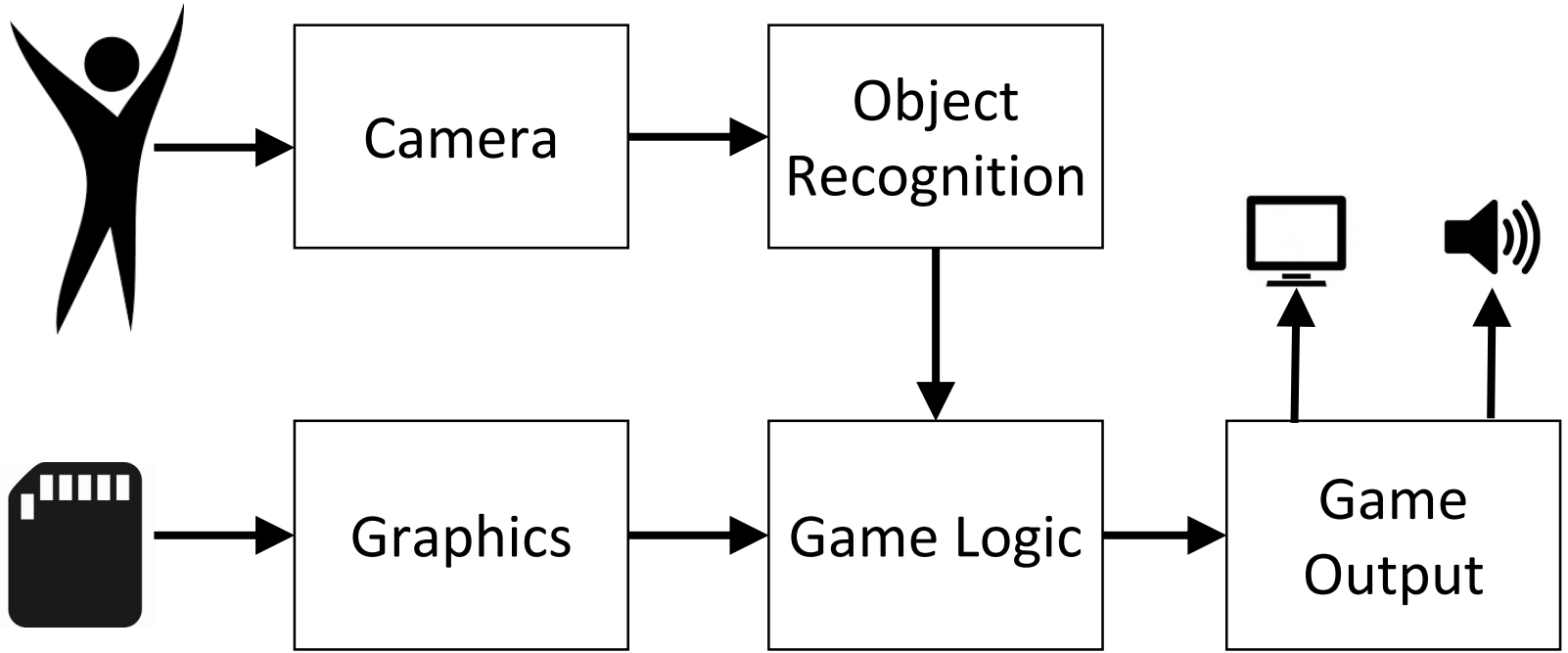
Robot Unicorn Attack

Bringing the Game to Life

Flying Pegasus Ground Attack

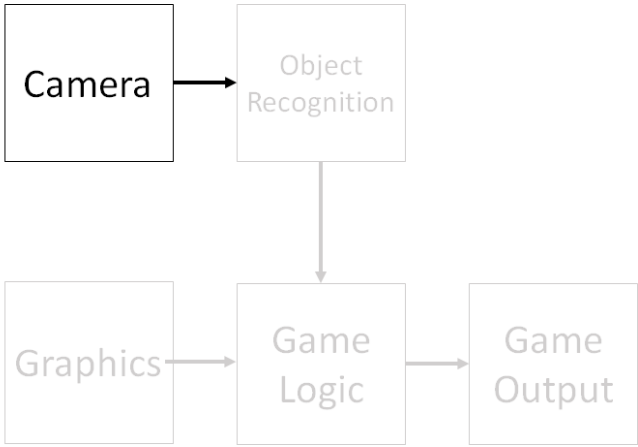
Kelly Qi | Tania Yu

System Overview

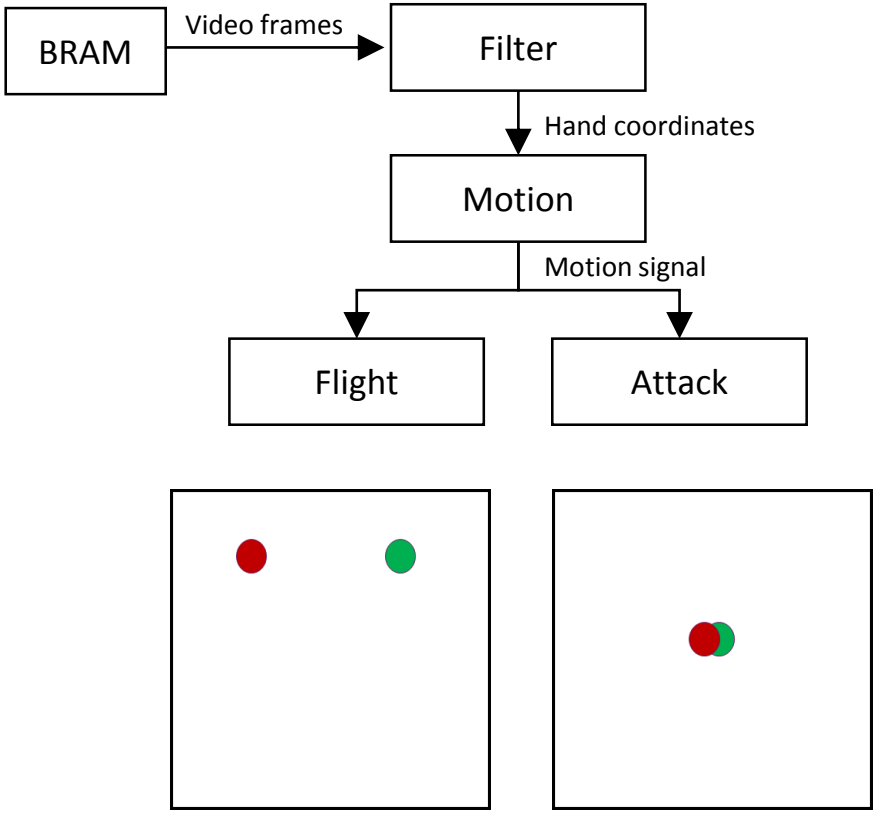


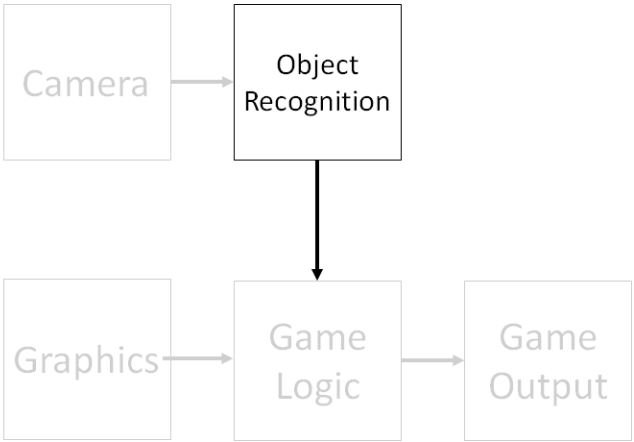
Camera

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

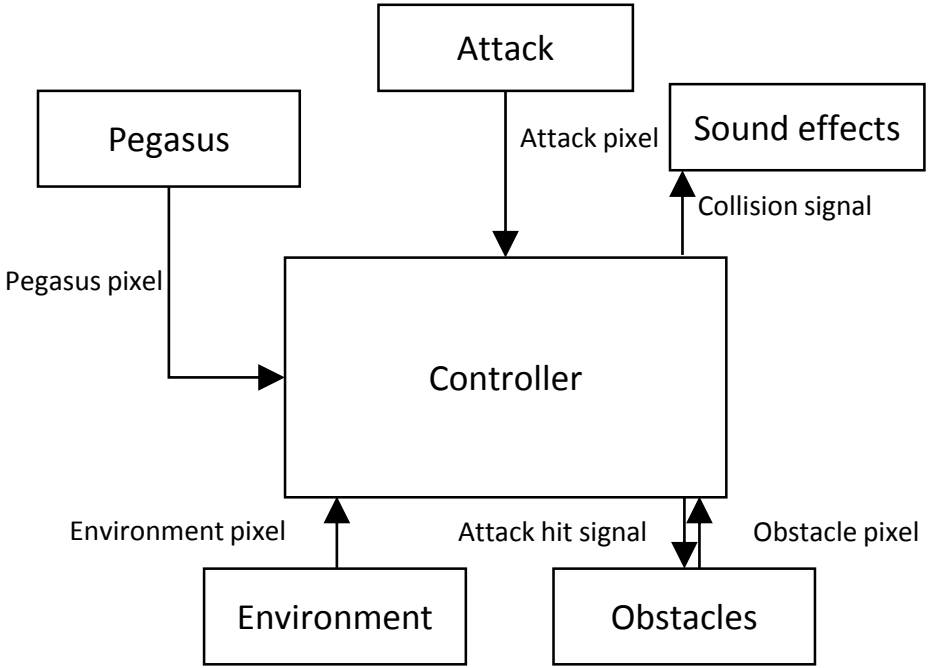


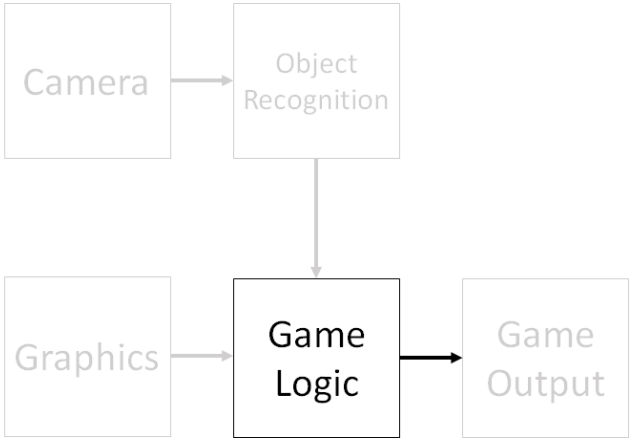
Object Recognition



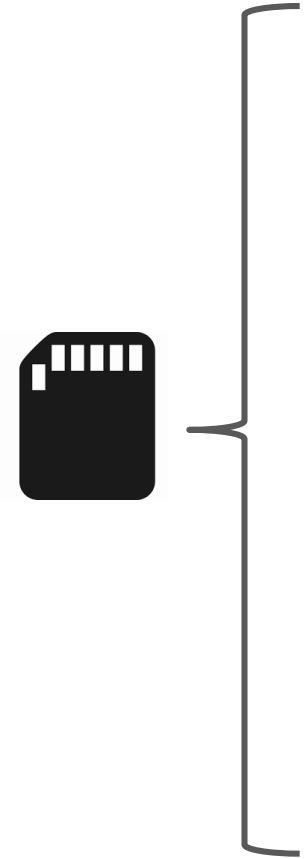


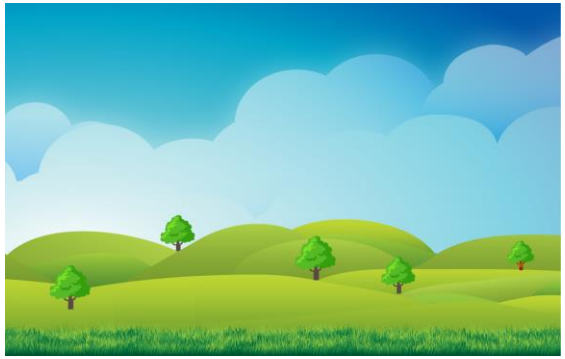
Game Logic

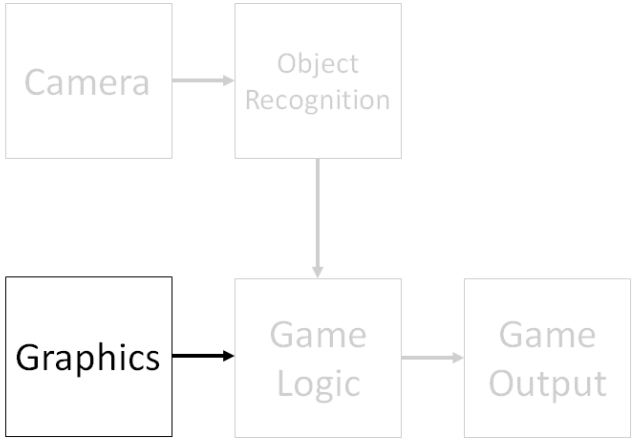

Attack
Pegasus
Attack pixel
Sound effects
Collision signal
Pegasus pixel
Controller
Environment pixel
Attack hit signal
Obstacle pixel
Environment
Obstacles


Camera
Object Recognition
Graphics
Game Logic
Game Output

Graphics

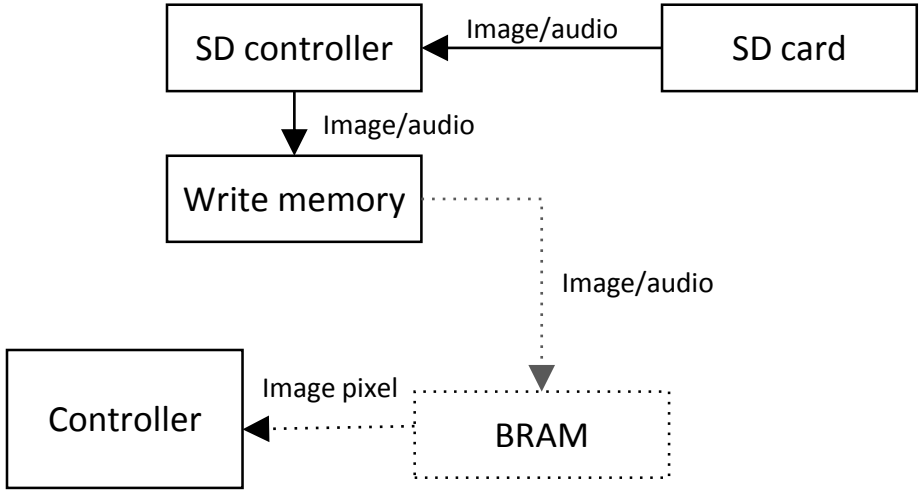





Camera
Object Recognition
Graphics
Game Logic
Game Output

Sprite Storage

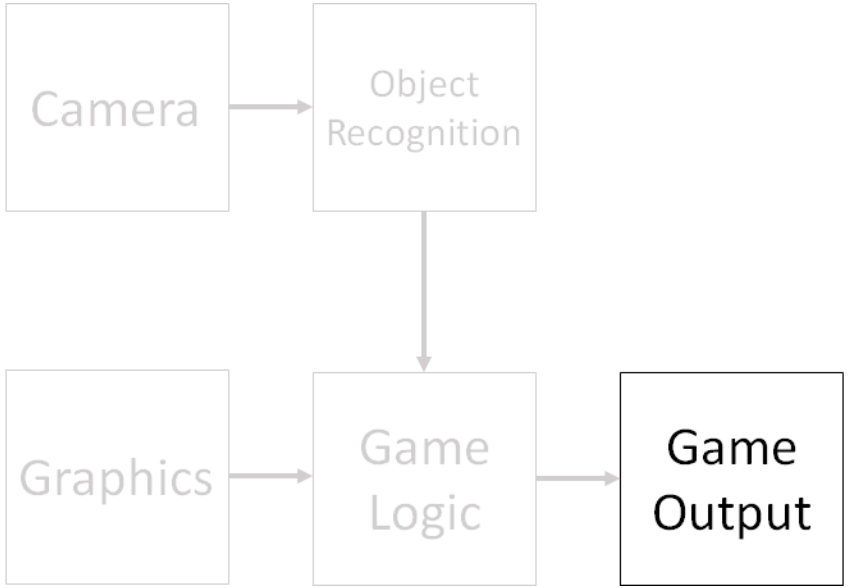
- Load background image to BRAM one column at a time
- Pre-load sprites in BRAM

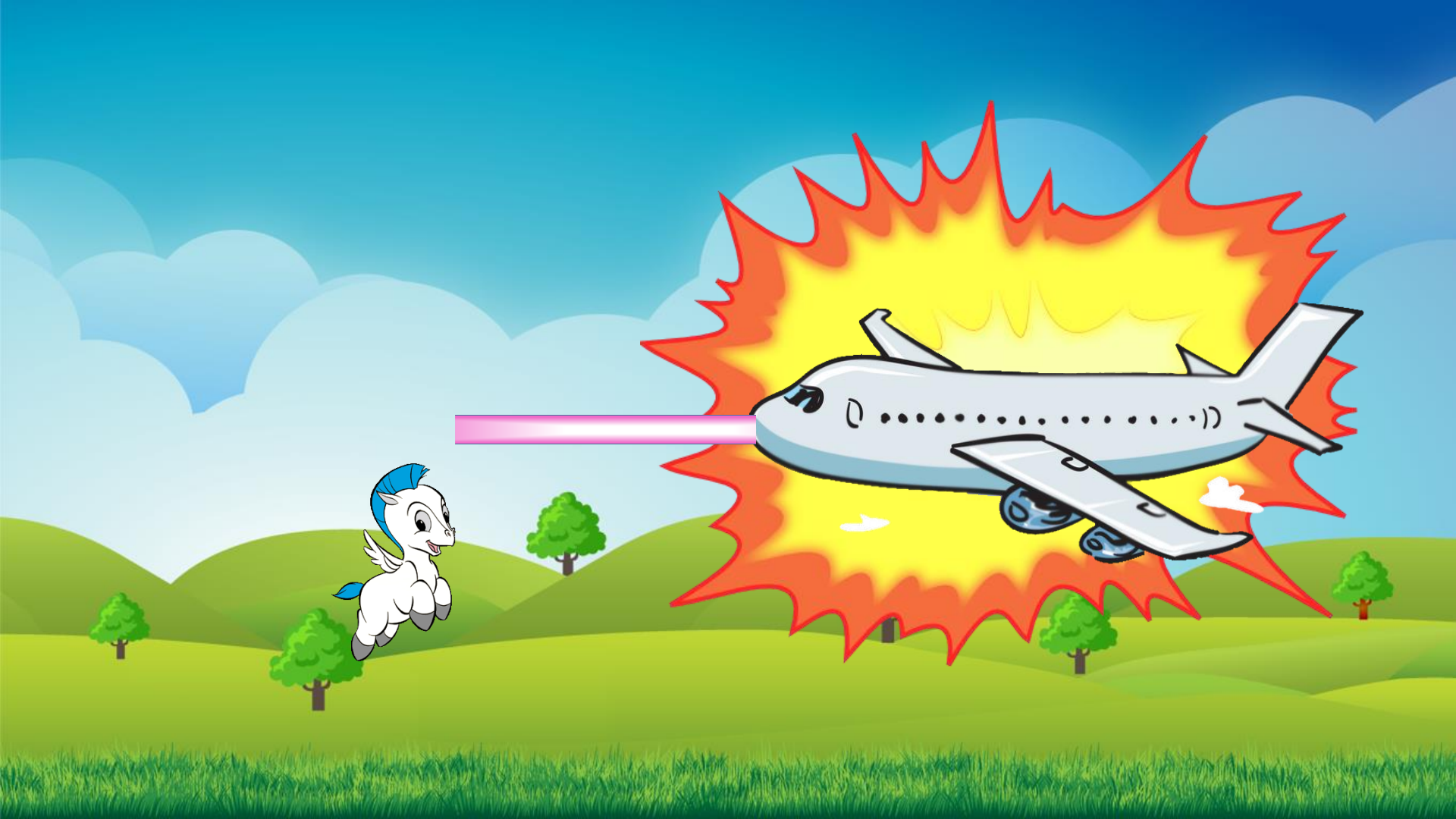


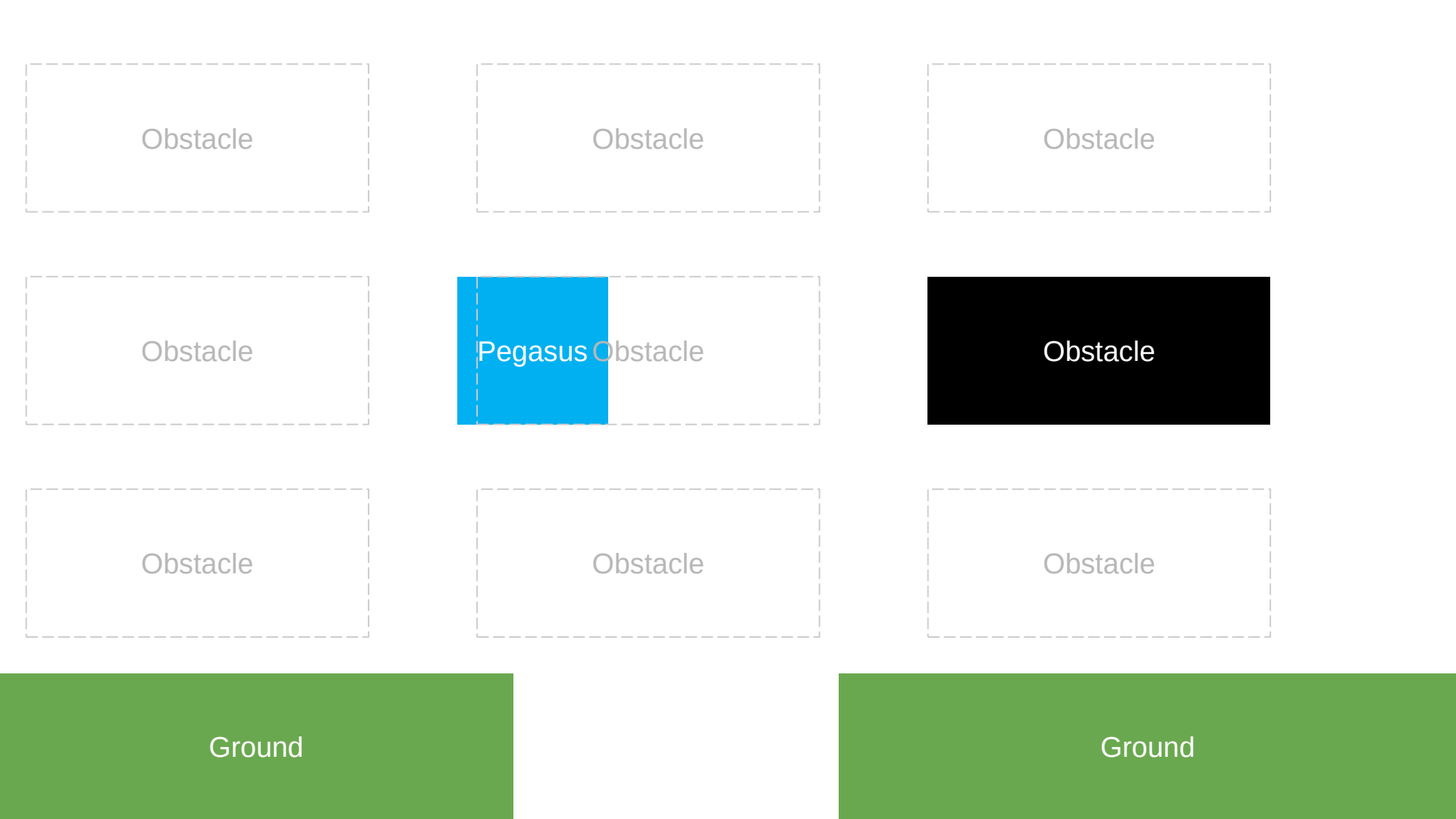
Game Output

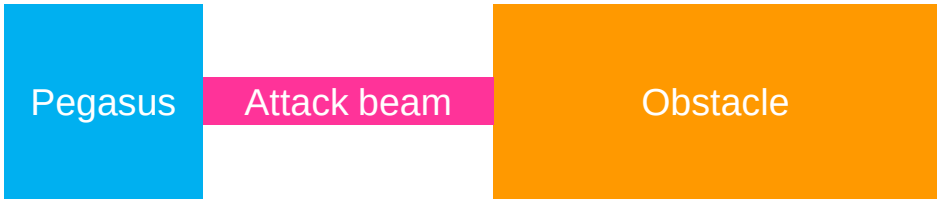
- Video to the monitor

- Audio to the speaker






Obstacle
Obstacle
Obstacle
Obstacle
Pegasus
Obstacle
Obstacle
Obstacle
Obstacle
Obstacle
Ground
Ground

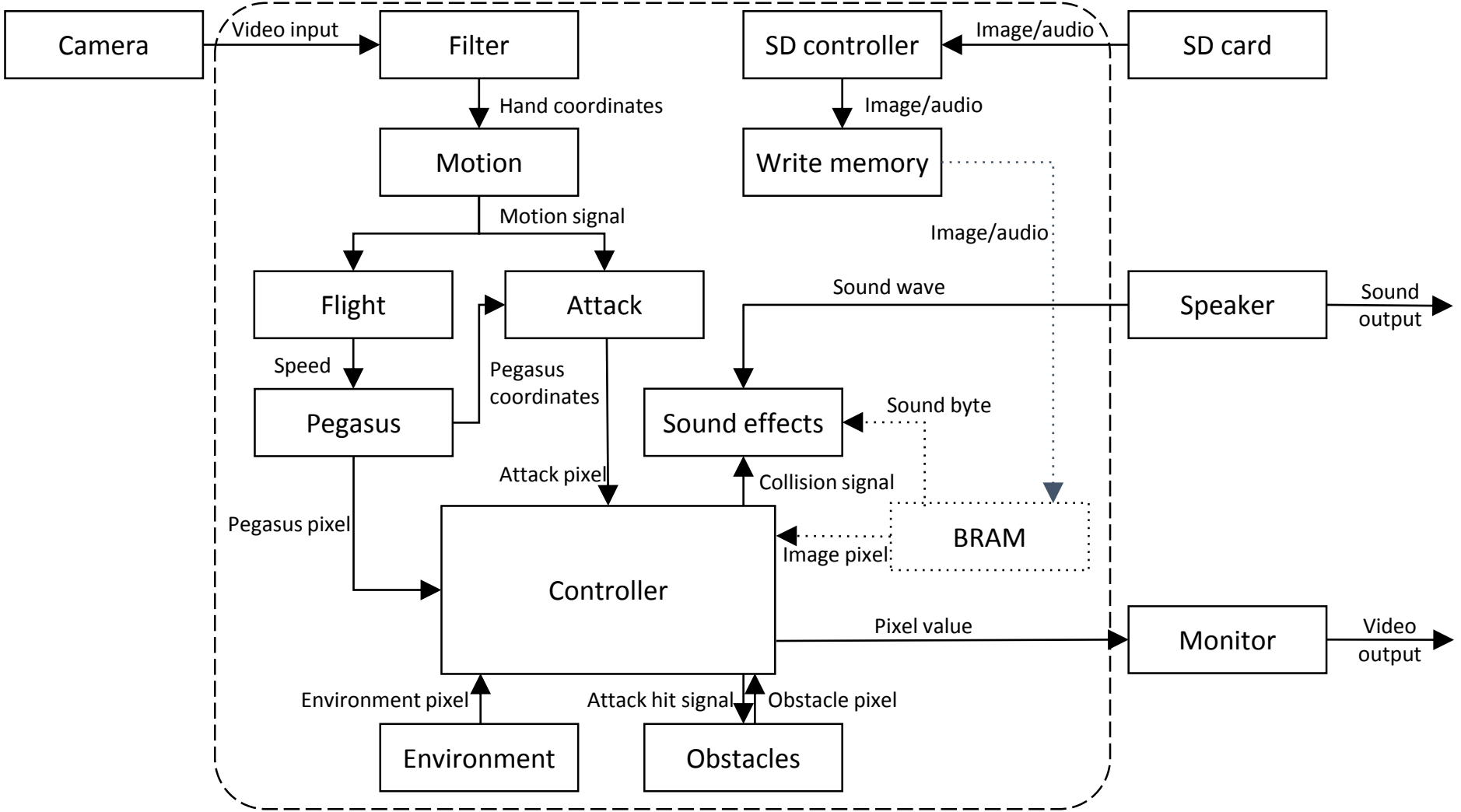


Ground

Ground

Ground

Ground


Camera
Video input
Filter
SD controller
Image/audio
SD card
Hand coordinates
Image/audio
Motion
Write memory
Motion signal
Image/audio
Flight
Attack
Sound wave
Speaker
Sound output
Speed
Pegasus coordinates
Pegasus
Sound effects
Sound byte
Attack pixel
Collision signal
Pegasus pixel
BRAM
Image pixel
Controller
Pixel value
Monitor
Video output
Environment pixel
Attack hit signal
Obstacle pixel
Environment
Obstacles

Task \ Week	11/1	11/8	11/15	11/22	11/29
Motion tracking					
Basic graphics					
Flight physics					
Integration and testing of basics					
Attacking obstacles					
Collision detection/death					
Integration and testing					
More graphics					
Sound effects and music					
Final integration and testing					
Stretch goals					

Kelly

Tania

Both


FLYING PEGASUS GROUND
ATTACK
Make your wishes come true!