



Fpglappy Bird

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Problem

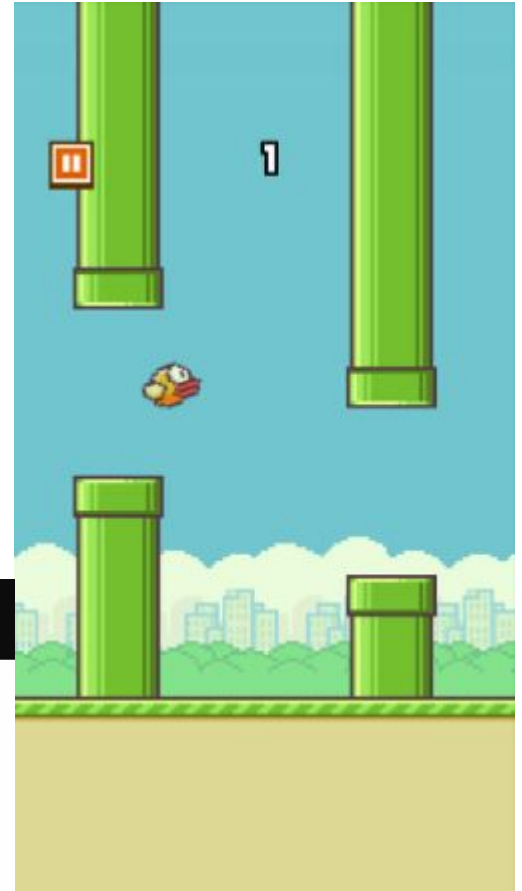
- popular, difficult and frustrating game
- software implementation for mobile devices
- “gone forever”



Developer yanks 'Flappy Bird' after game soars to success

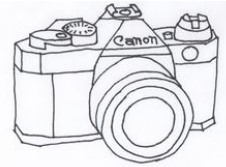
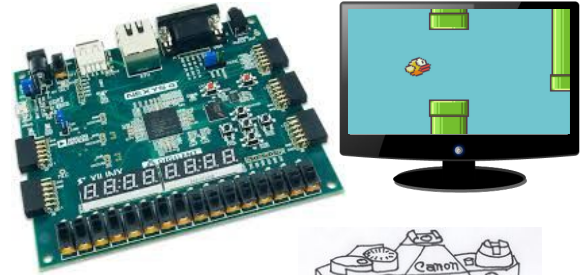
By Catherine E. Shoichet, CNN

Updated 10:27 AM ET, Tue February 11, 2014

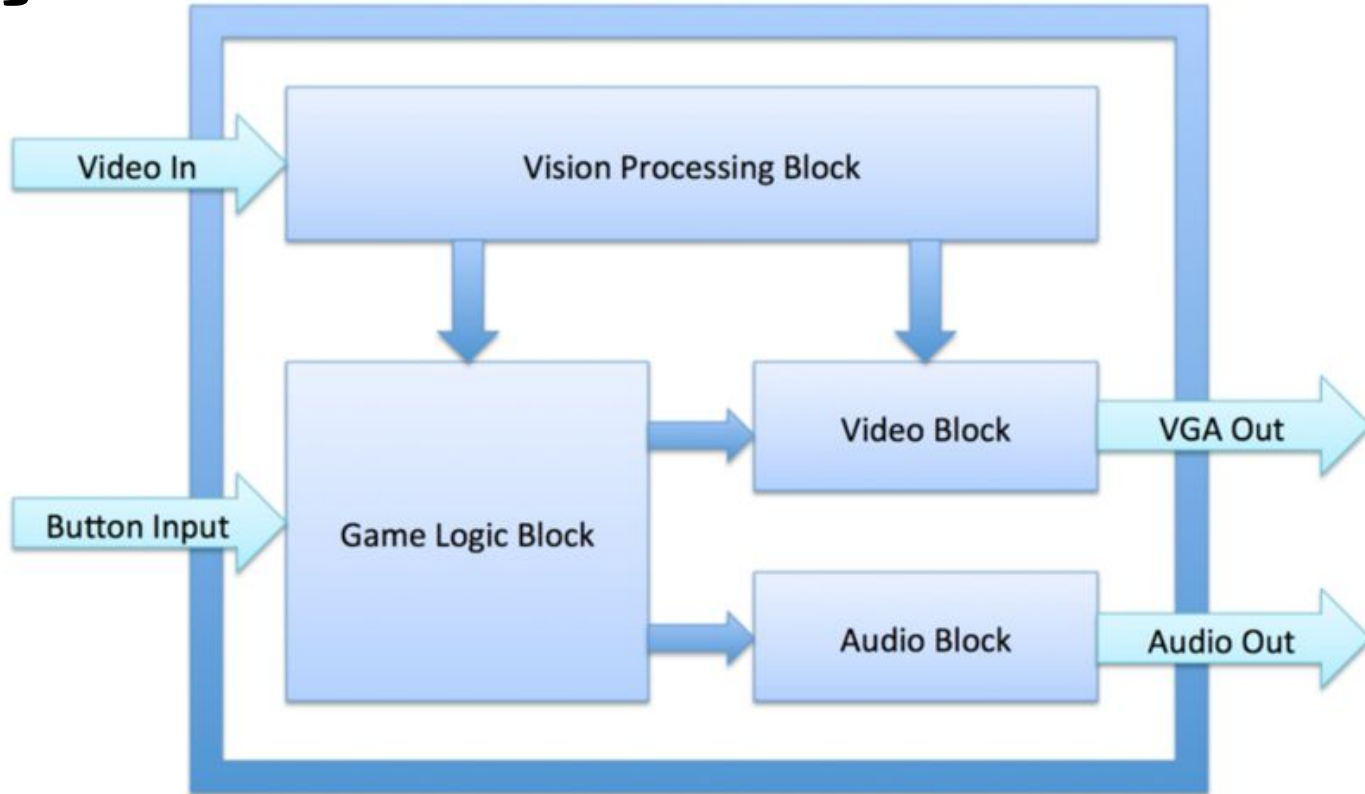


Overview

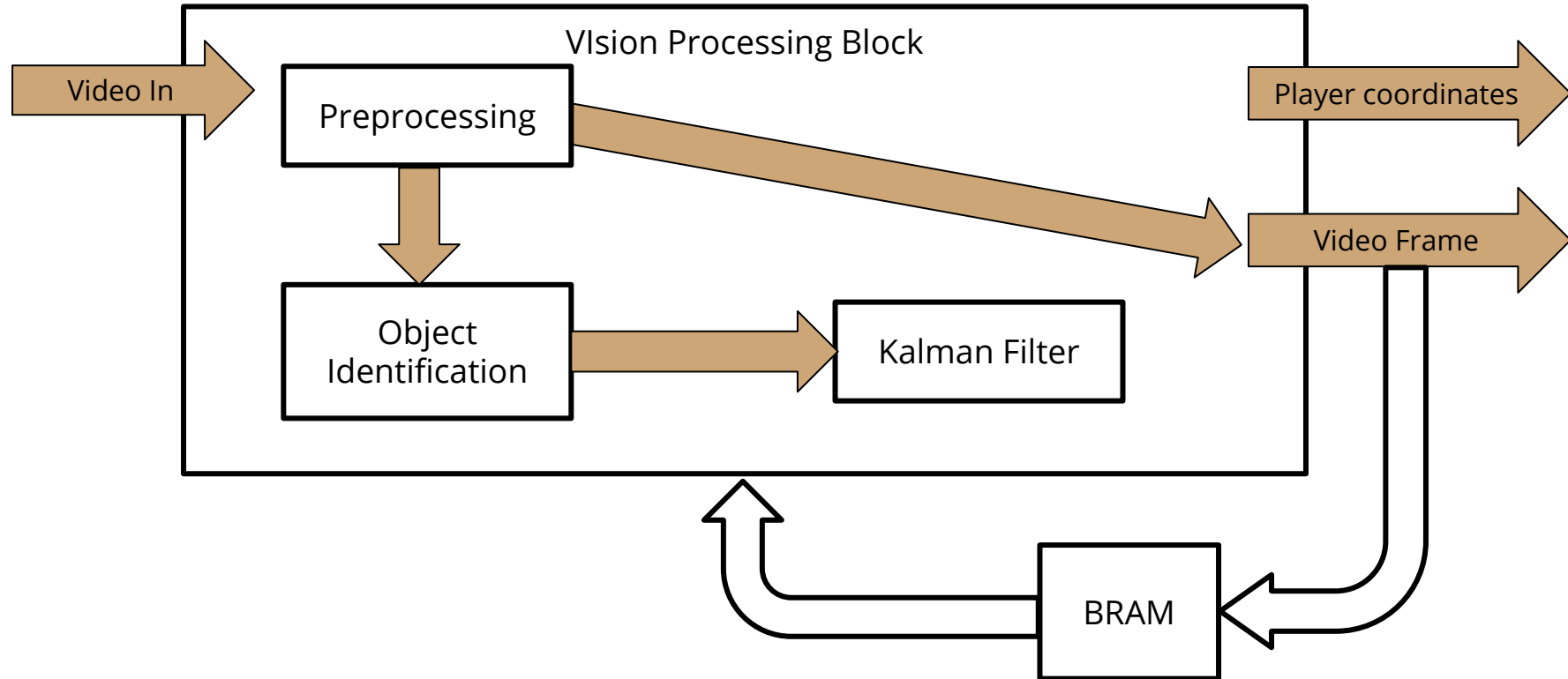
- Implement on NEXYS 4
- OV7670 camera points at player and tracks “beak” on their face
- Game images built from predefined sprites
- Sound effects from SD card
- Player jumps => bird jumps



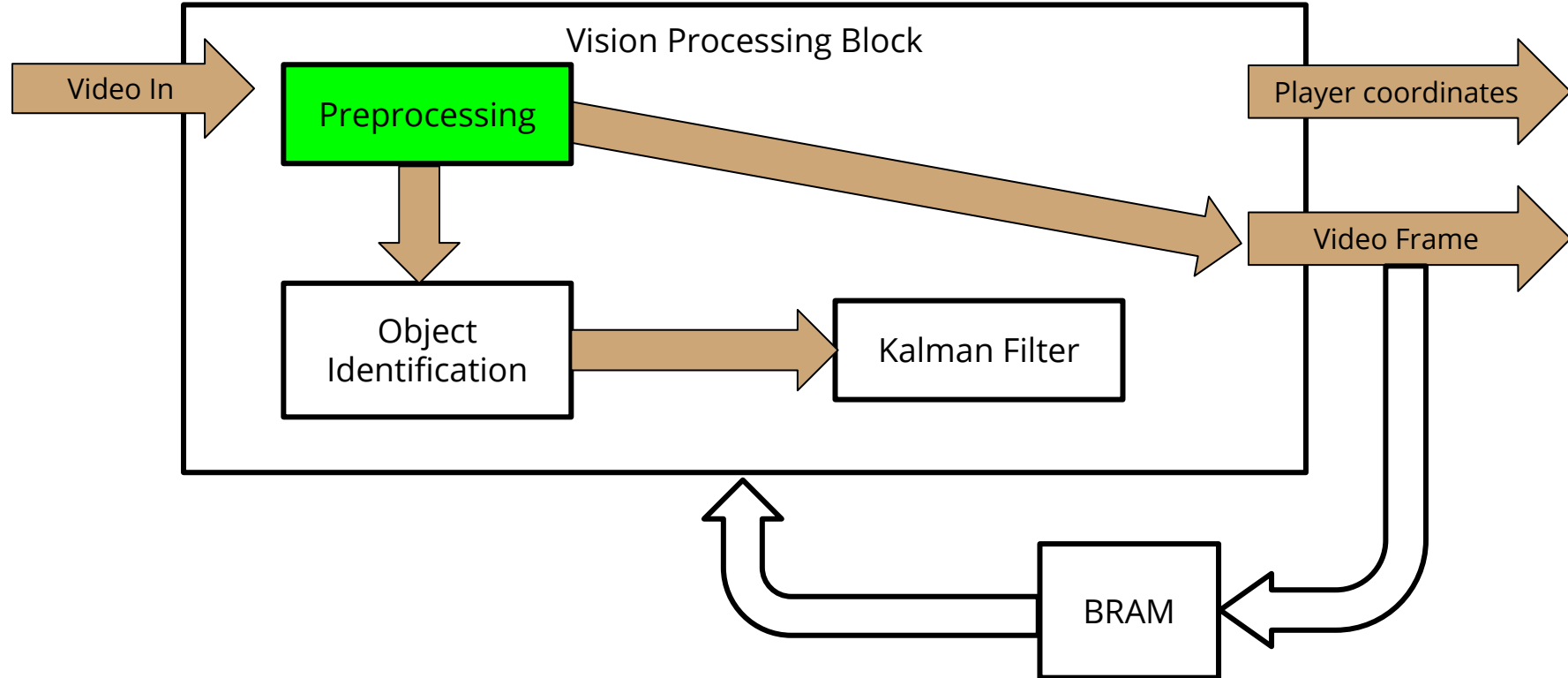
Design



Implementation: Vision Processing Block

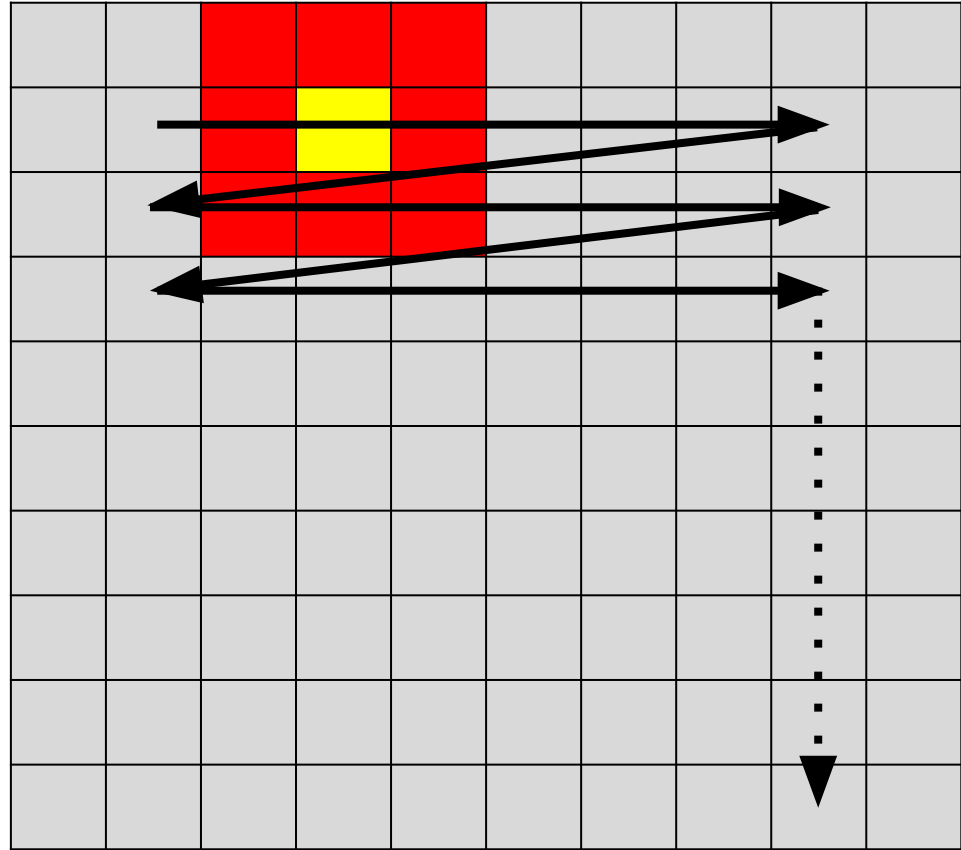


Implementation: Vision Processing Block



Preprocessor

- Gray-scale Conversion
- Thresholding
- Noise Filtering

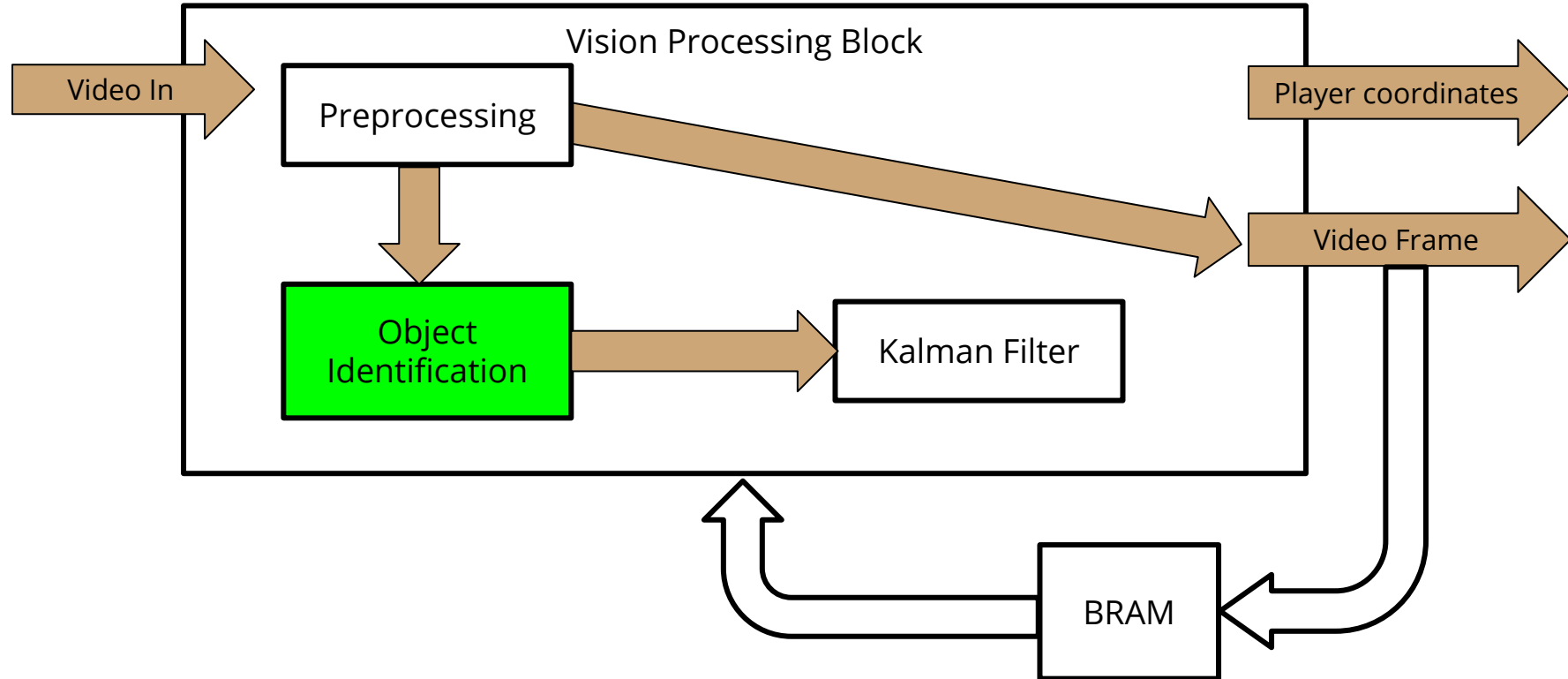


Preprocessor

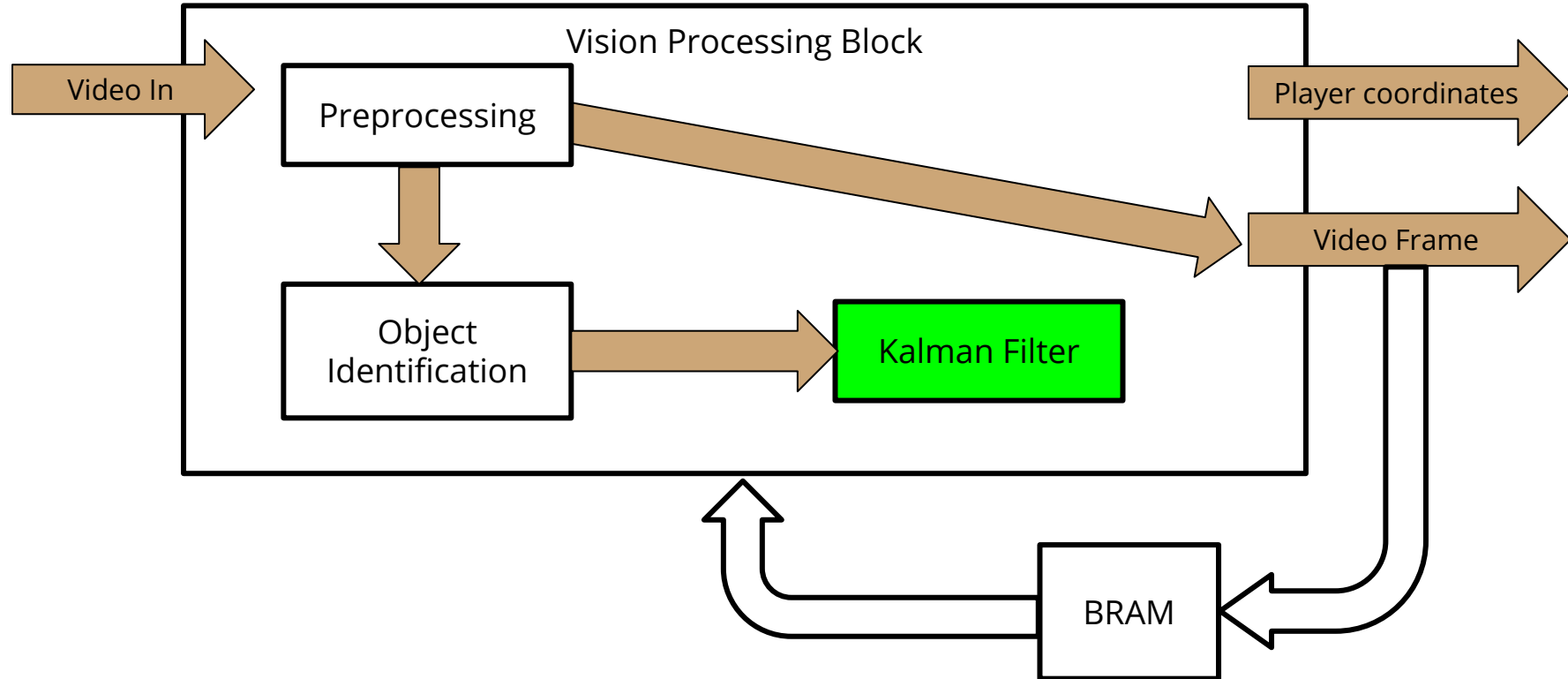
- Gray-scale Conversion
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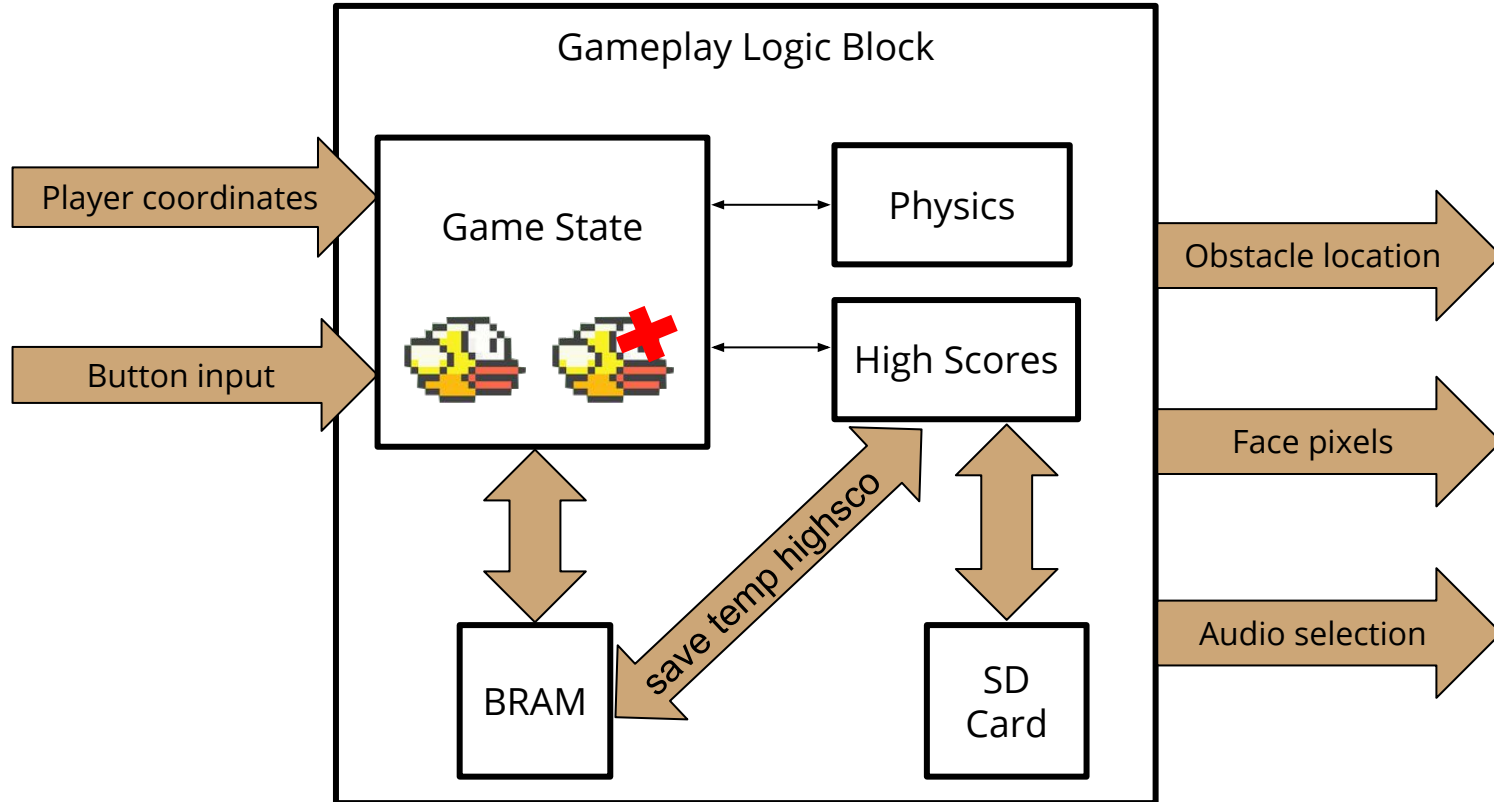
Implementation: Vision Processing Block



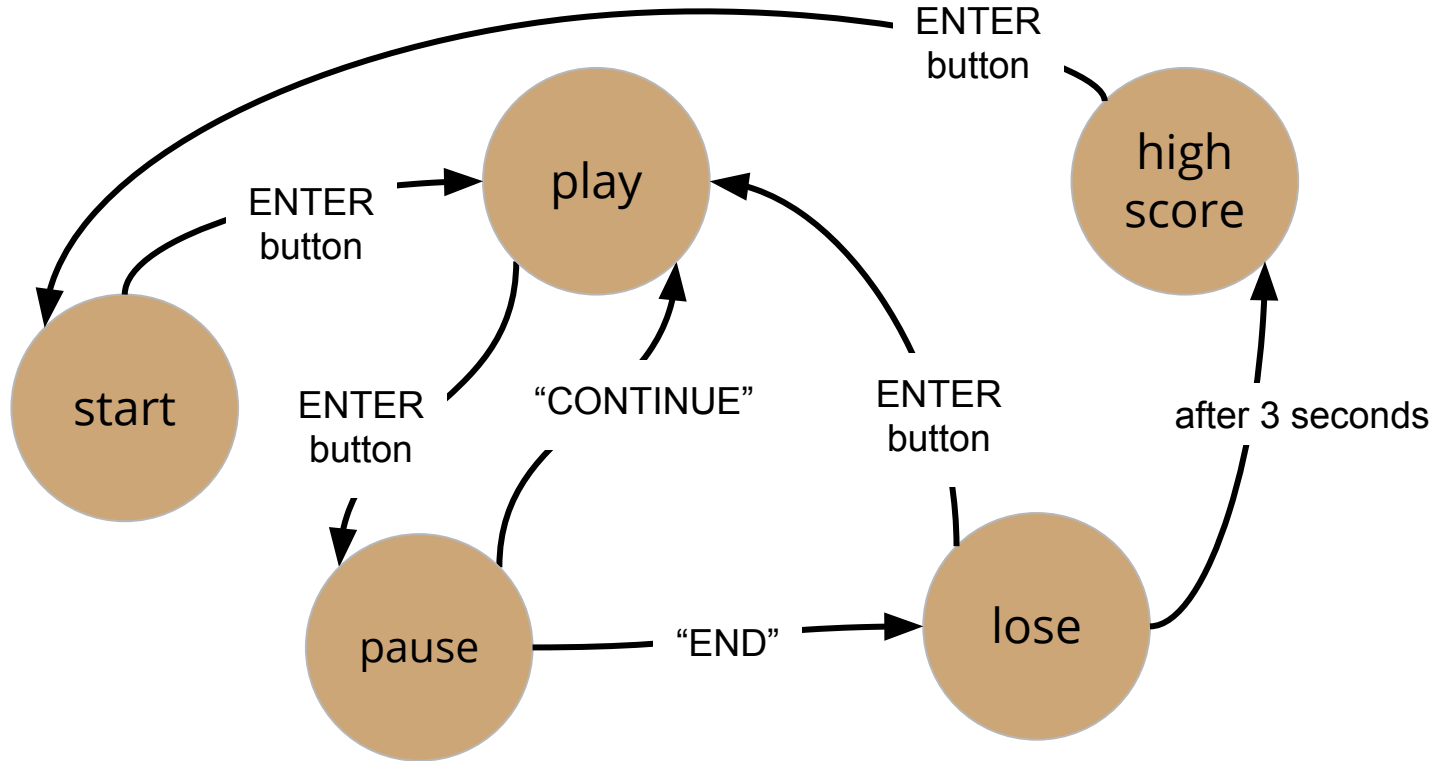
Implementation: Vision Processing Block



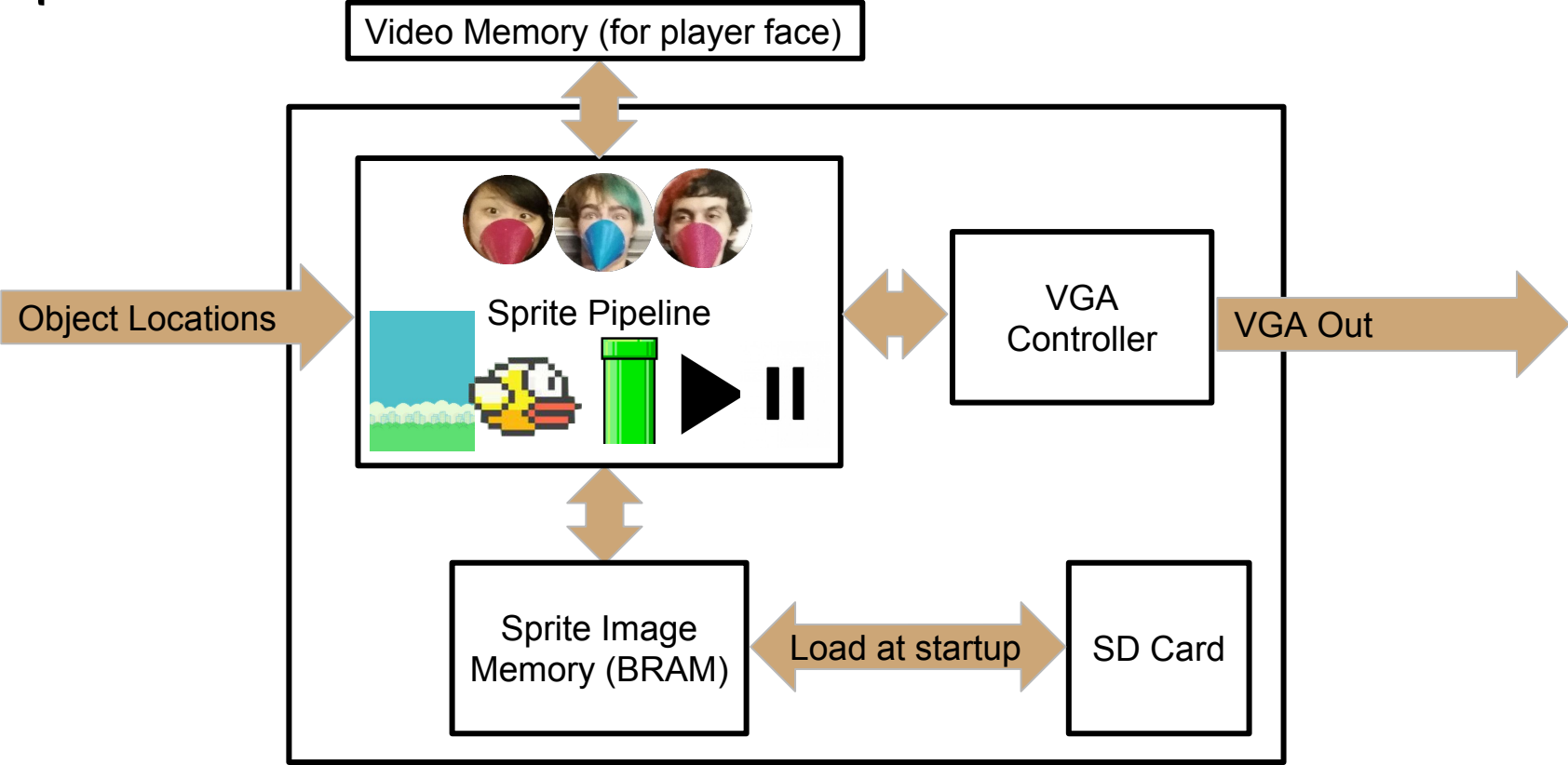
Implementation: Gameplay Logic Block



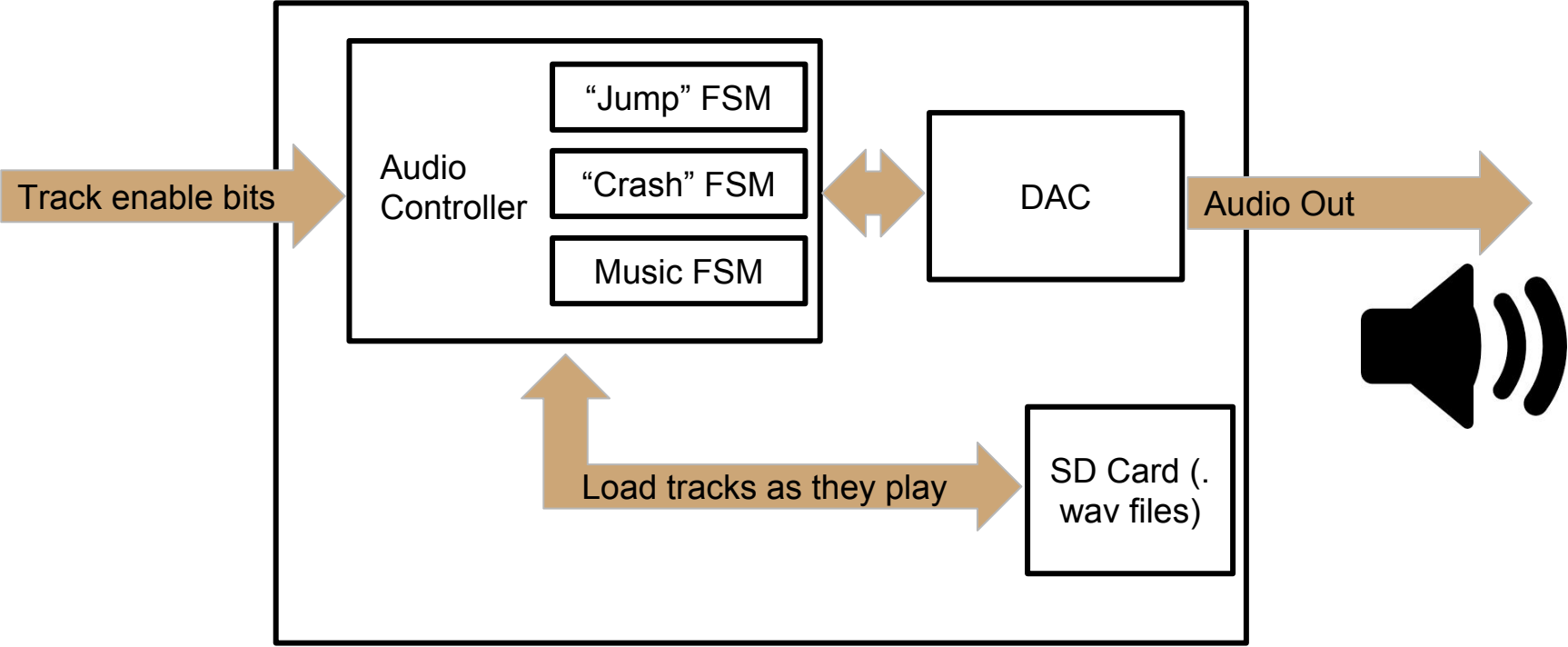
Implementation: Game States



Implementation: Video Block



Implementation: Audio Block



Schedule

Task	11/1	11/8	11/15	11/22	11/29	12/06
Interface with FPGA	All					
Object Tracking Module	J	J	J			
Audio/Video Module	N	N				
Game Logic Module	W	W				
Preliminary Testing		All	All	J		
Integration: Game Logic, Audio Video			N, W			
Integration: Object Tracking			All	All		
Testing				All		
Buffer Time/Stretch Goals					All	
Demo/Final Presentation						All

Complexities

- Memory management during image processing
- Noise management
- Distributing access to SD card



Stretch Goals

- Multiple FPGAs running the game and comparing high scores
- Sprite rotates as it jumps
- Multiplayer version

