



Musical Sculpture

A 6.111 Final Project Block Diagram

Presentation by:

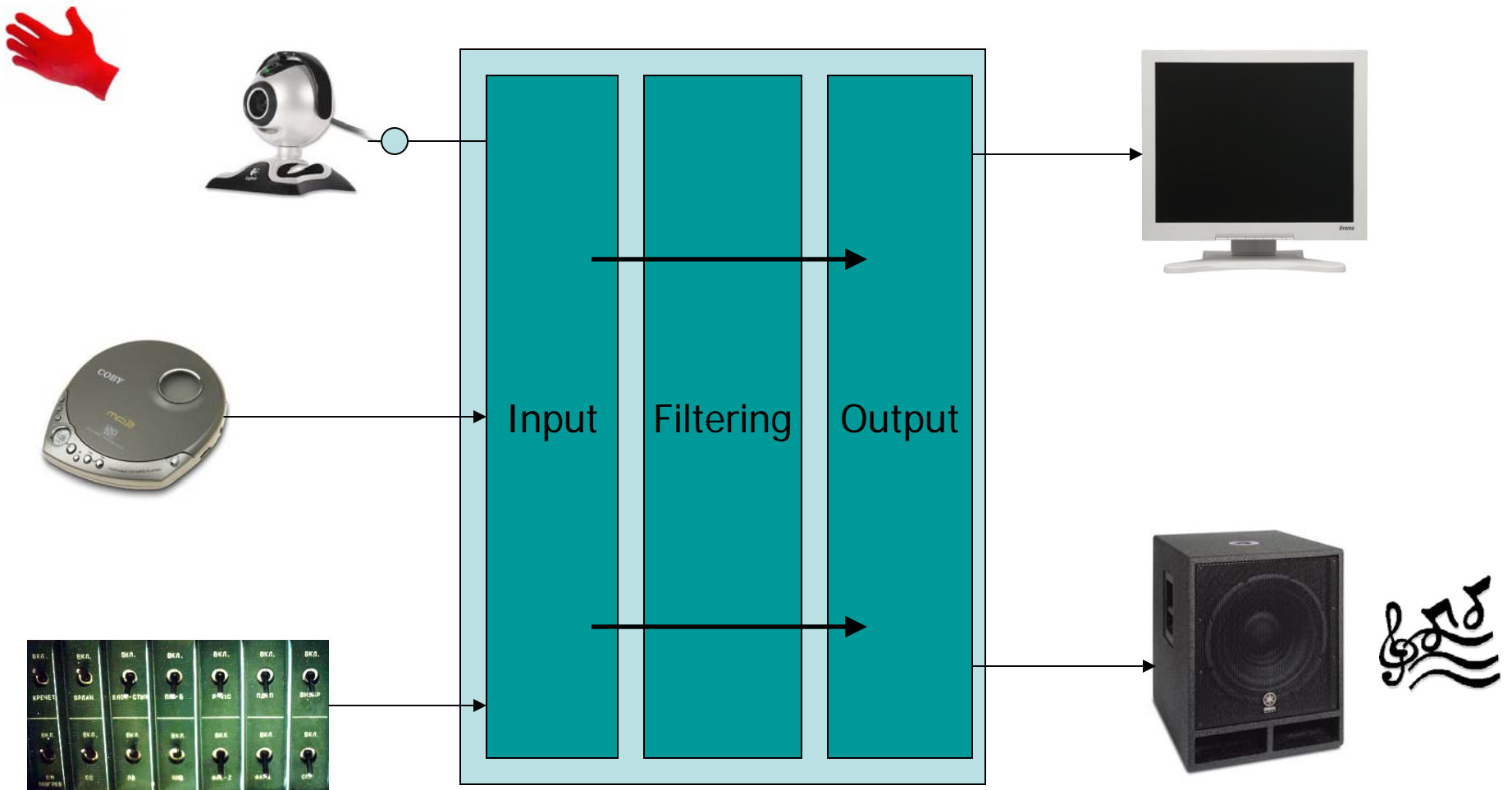
Clare Davis, Chen Li, & Austyn Hill

Musical Sculpture

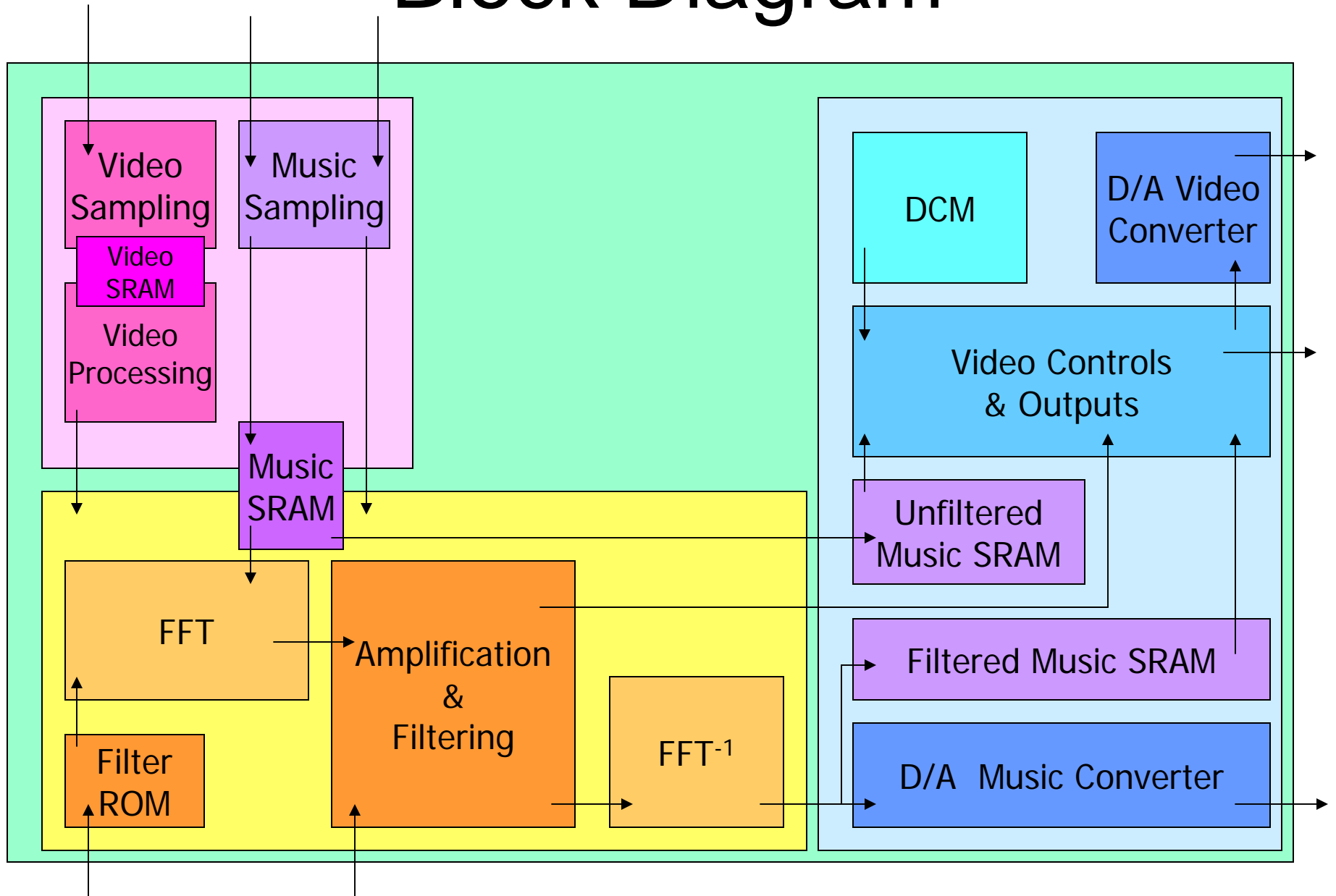
- Project Goals:
 - Analyze Hand Movement
 - Create Filter & Apply to Music
 - Output Visualization of Music & Filter



Project Diagram



Block Diagram

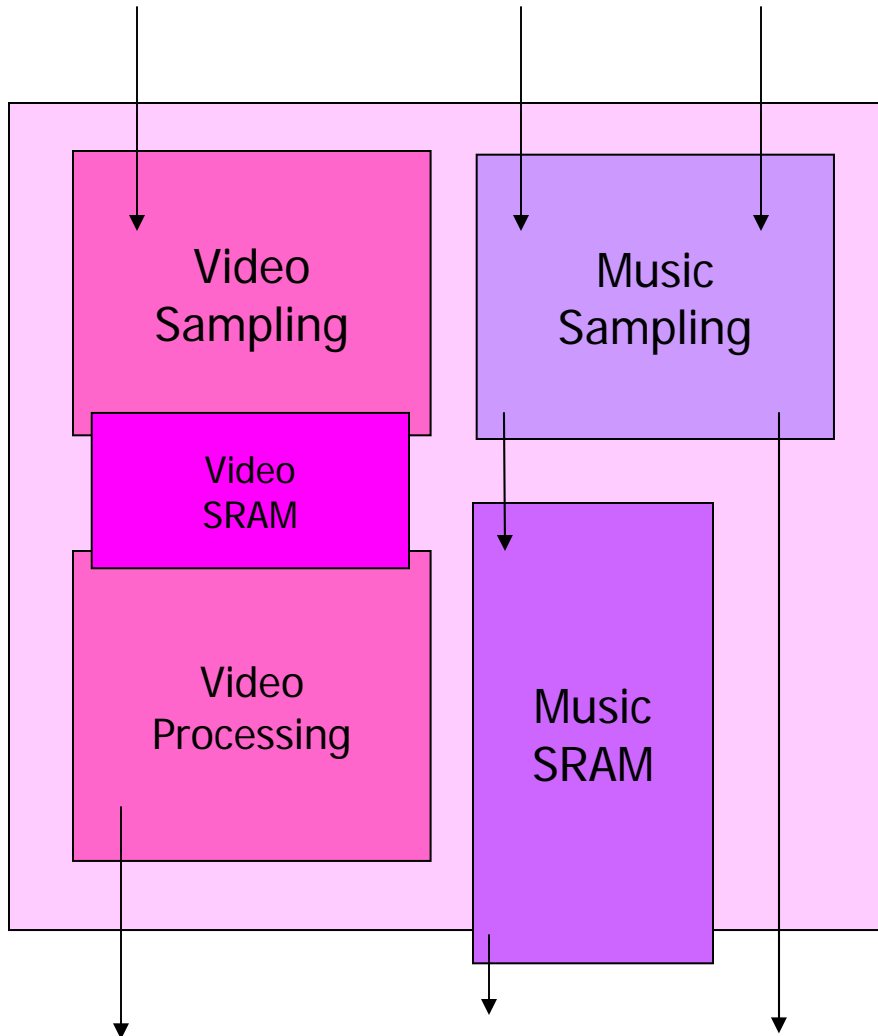


Input

- Sample
 - Music
 - Up-Sampling
 - Down-Sampling
 - Video
- Store
 - Music
- Analyze
 - Video



Musical & Video Input



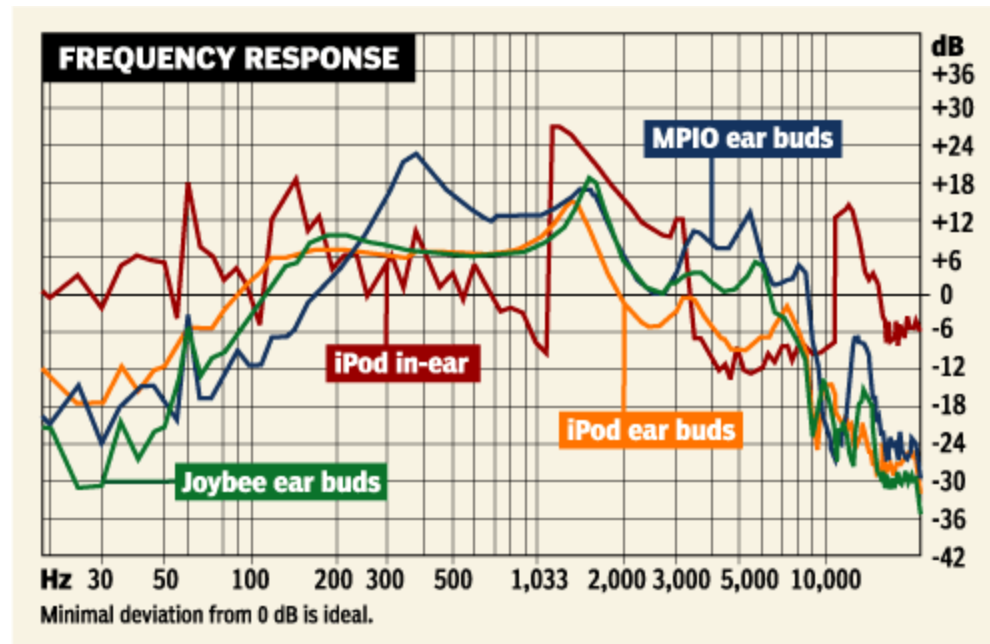
- Video Sampling
 - Samples
 - Stores – Video SRAM
- Music Sampling
 - Samples
 - Up Sampling
 - Down Sampling
 - Stores – Music SRAM
- Video Processing
 - Analyzes Pixels
 - Outputs x,y location

Filtering

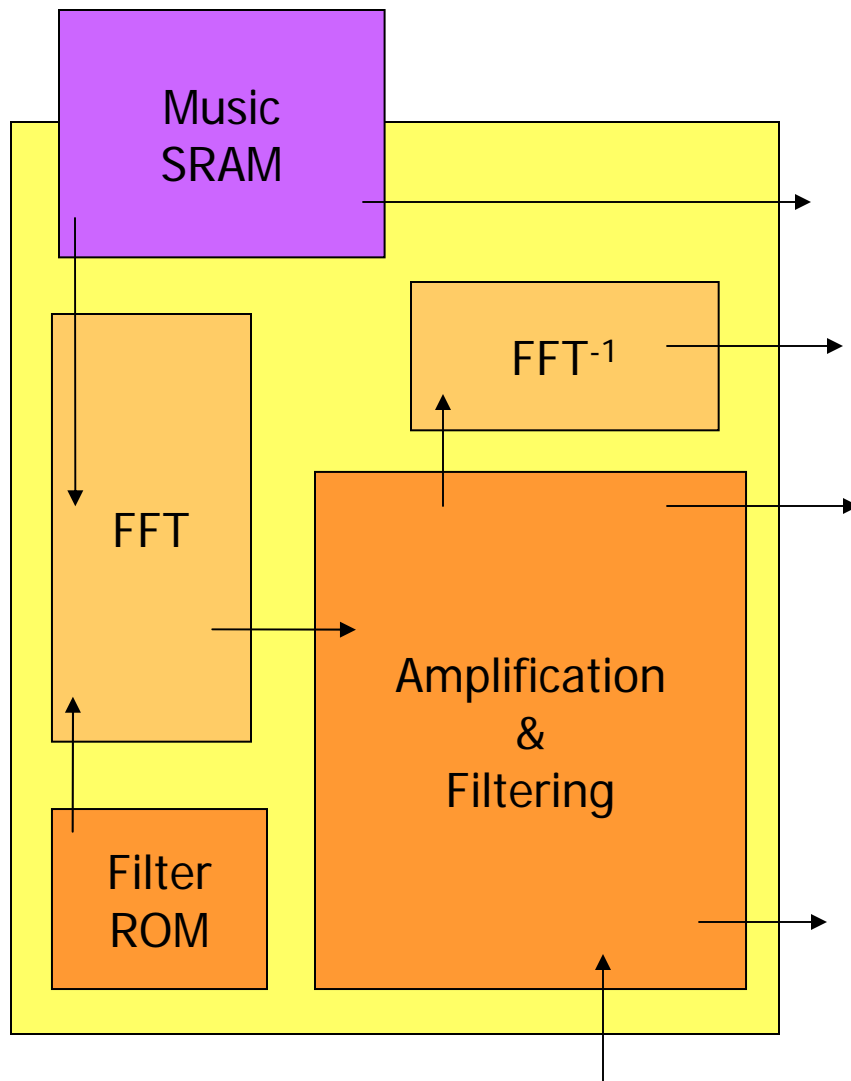
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- Frequency space filtering
- Changing sound effects using variable filters
- Pitch detection & selection
- Filter storage & output to video
- 0 – 10,000Hz



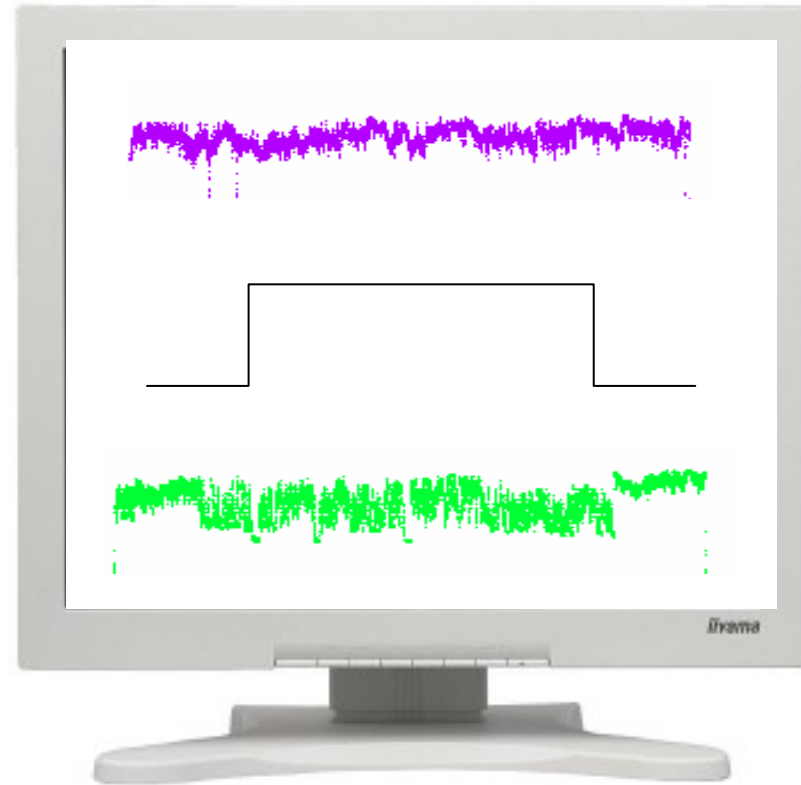
Filtering



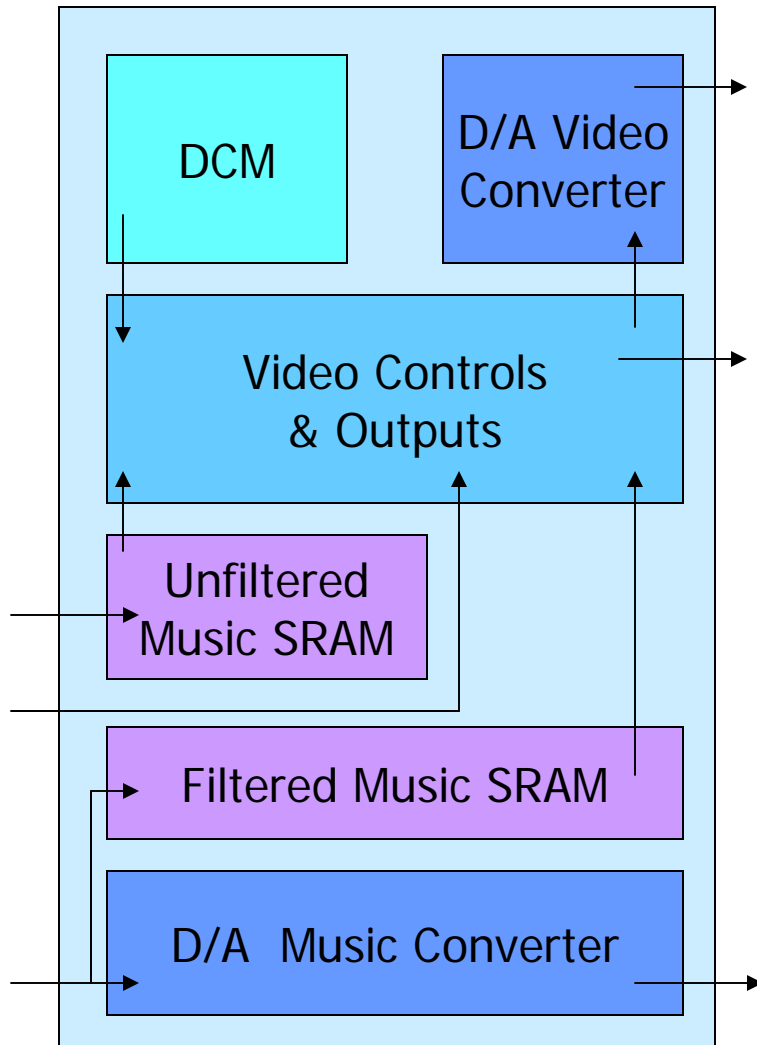
- **FFT**
 - Frequency space
- **Amplification & Filtering**
 - x, y locations & switch
 - Modifying cutoff frequency of lowpass, highpass, band-pass filters
 - Amplitude modification
- **Filter ROM**
 - Store filter coefficients
- **FFT⁻¹**
 - Time space

Output

- Display
 - Music
 - Before Filtering
 - After Filtering
 - Filter
- Output Filtered Music



Music & Video Outputs



- DCM – generates pixel clock
- SRAMs – stored for video output
 - Filtered Music
 - Unfiltered Music
- Video Controls & Outputs :
 - Generates:
 - Video Sync Signals
 - Blanking Signal
 - Pixel Values
- D/A Converters
 - Music
 - Video