PerfectPitch

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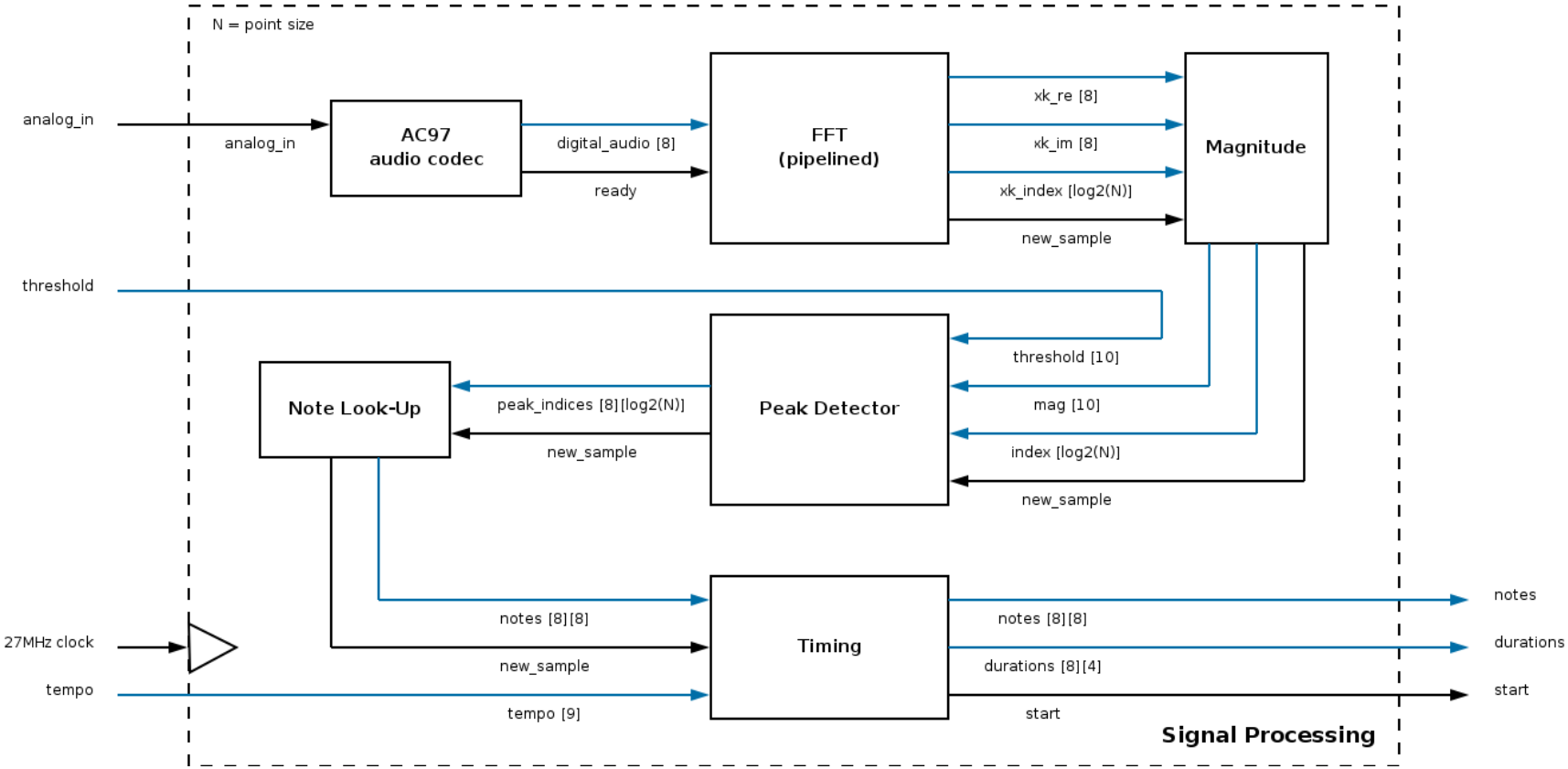
Overview

- Analog to Input
- Signal Processing
  - Peak Detector
  - Timing Module
- Video Display
  - Note Position
  - Note Display
  - Note Sprite

http://imagecache2.allposters.com/images/pic/GAN/OSB-20~Music-Notes-I-Posters.jpg

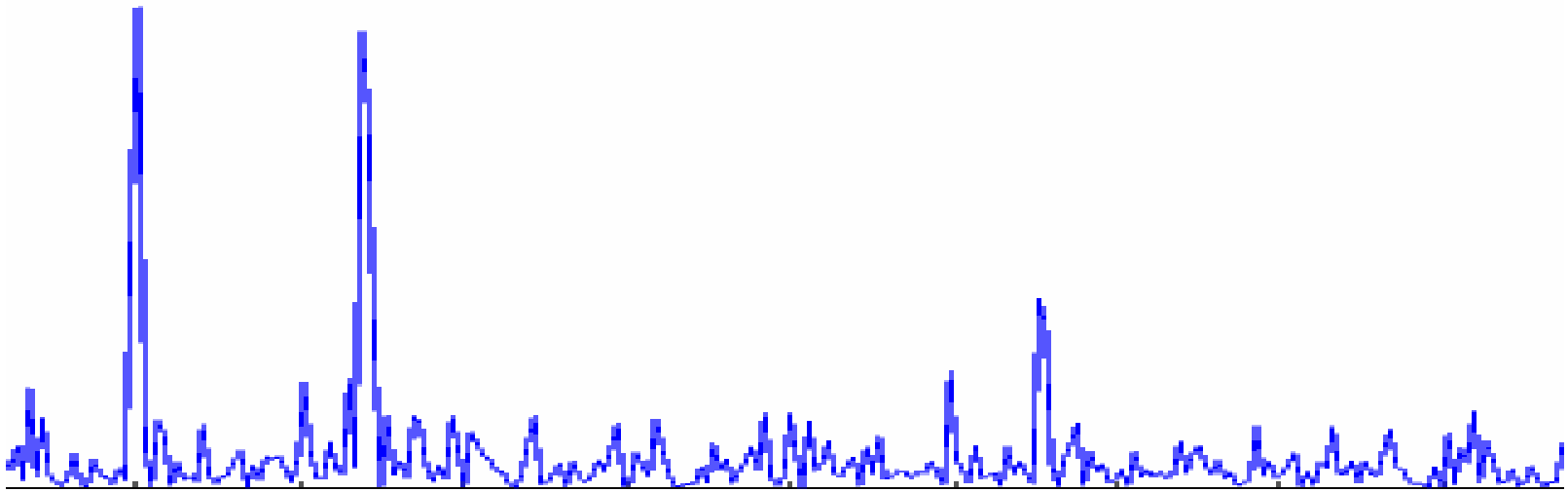
Signal Processing Block Diagram



Signal Processing

Peak Detector

- finds the 8 largest peaks by magnitude
- uses threshold to discriminate peaks from harmonics and noise

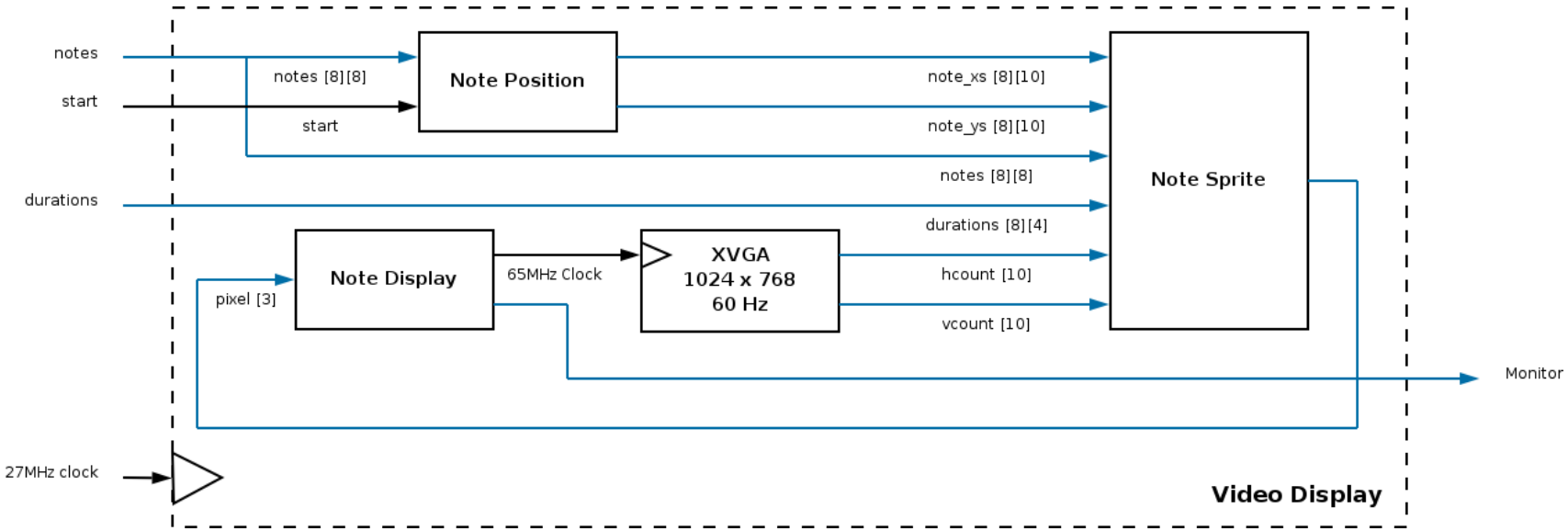


Signal Processing

Timing Module

- checks for changes in any of the 8 notes
- waits for all 8 note durations to be determined before sending them to video display
- keeps track of all incoming notes in registers to avoid missing notes while waiting for durations to be calculated
- uses tempo input to determine timing

Video Display Block Diagram



Video Display

Note Position

- determines where new notes should go
  - looks at whether a note already exists
  - all notes are spaced uniformly

http://www.teamtechnology.co.uk/conductor.gif

Video Display

Note Display

- creates 65MHz clock for XVGA
- maintains frame buffer
  - updated with information given from Note Sprite module
- sends correct data to monitor

Video Display

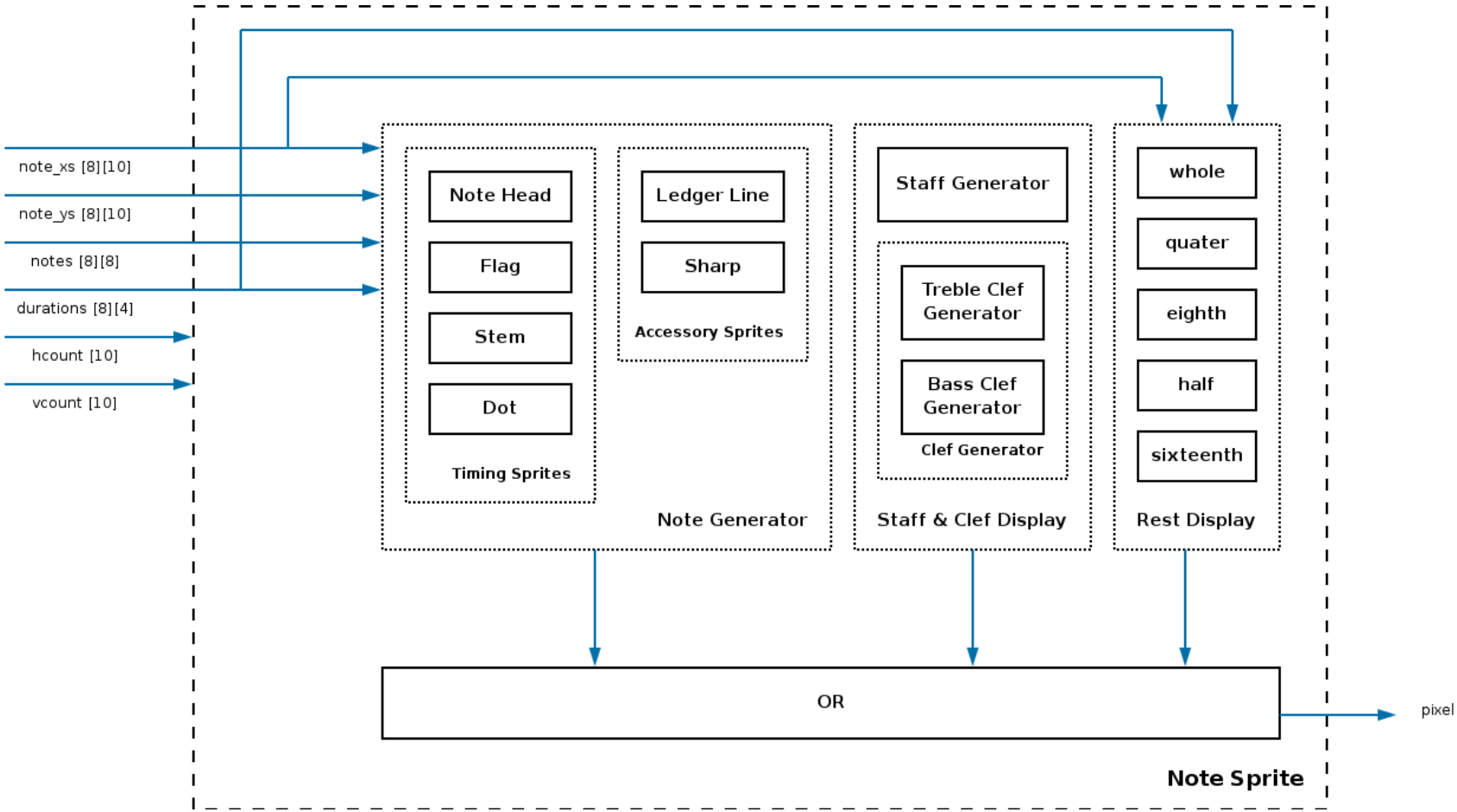
Note Sprite

- database of all sprites
- comprised of three submodules:
  - rest display module
  - staff and clef display module
  - note generator module

http://thumbs.dreamstime.com/thumb_150/11798011756h6B95.jpg

Video Display

Note Sprite Submodules



Projected Timeline

- 11/11 presentation and checklist
  - Analog to Input, Magnitude
- 11/18
  - Note Sprites, Note Look-Up, Peak Detector
- 11/25
  - Timing, Note Position, Note Display
- 12/2
  - debugging
- 12/9 project checkoff, final report
  - ☺