

Audio Driven Laser Tetris

6.111 Final Project Presentation

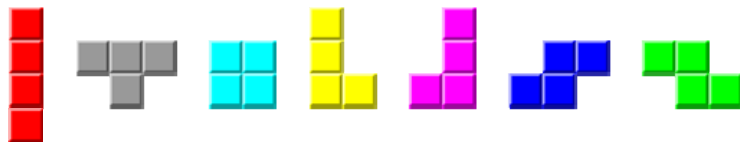
Cameron Lewis and Xin Sun



Overview

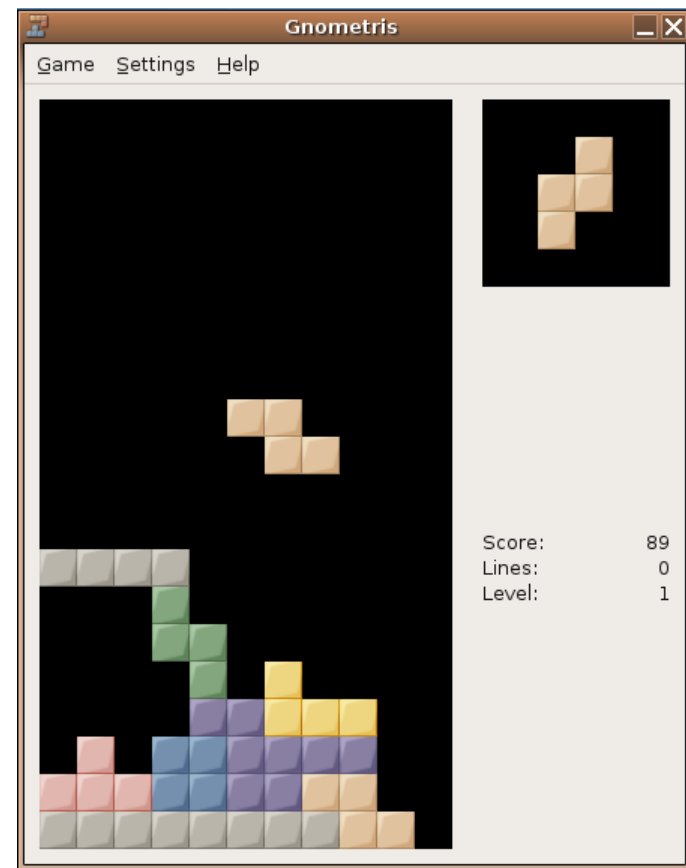
- Variant of the classic arcade game
- VGA display provides all game info
- Music drives the block movement
- Laser projects the playing field

Tetris Game Background

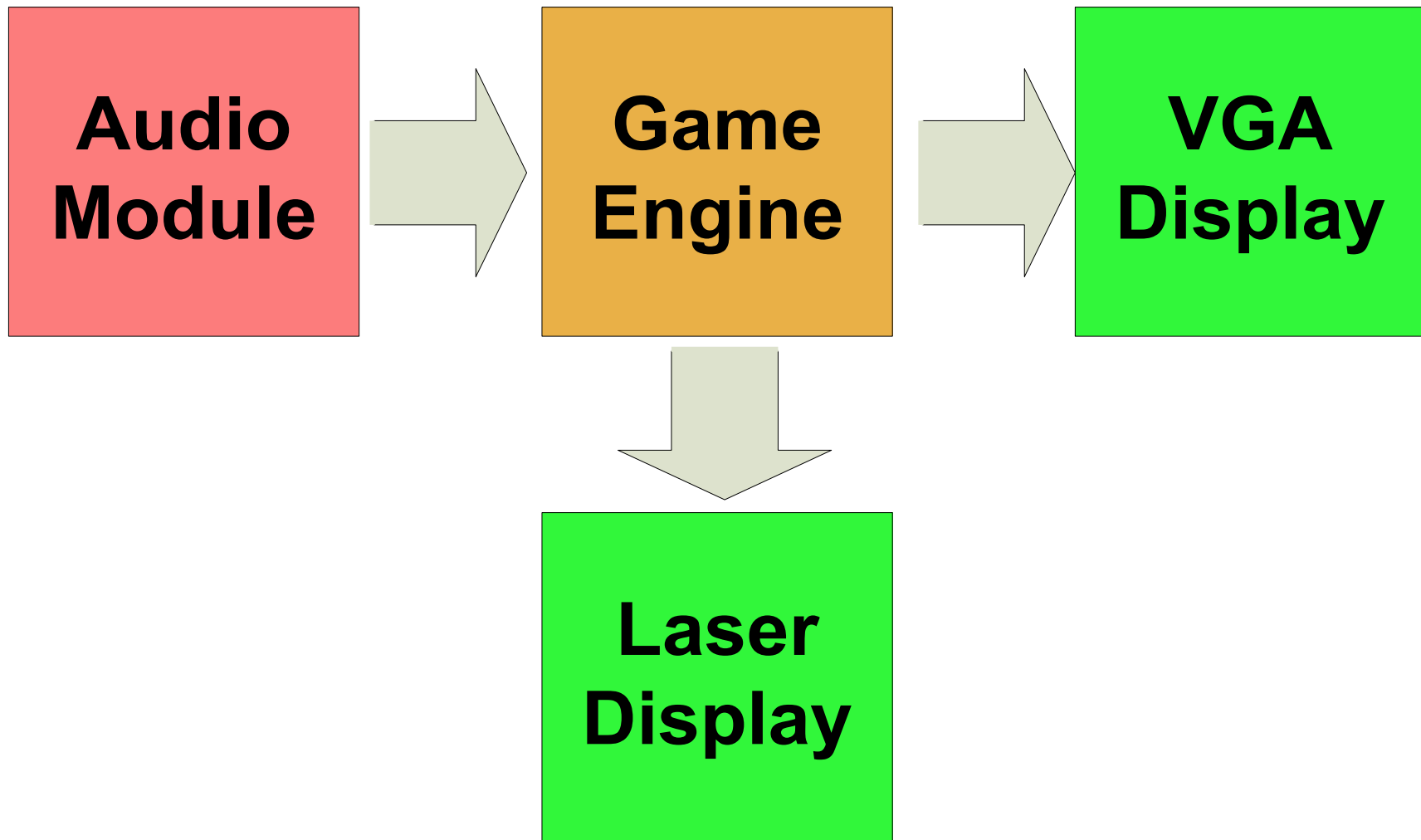


The seven possible *Tetris* pieces:
I, T, O, L, J, S, and Z.
(courtesy of Wikipedia)

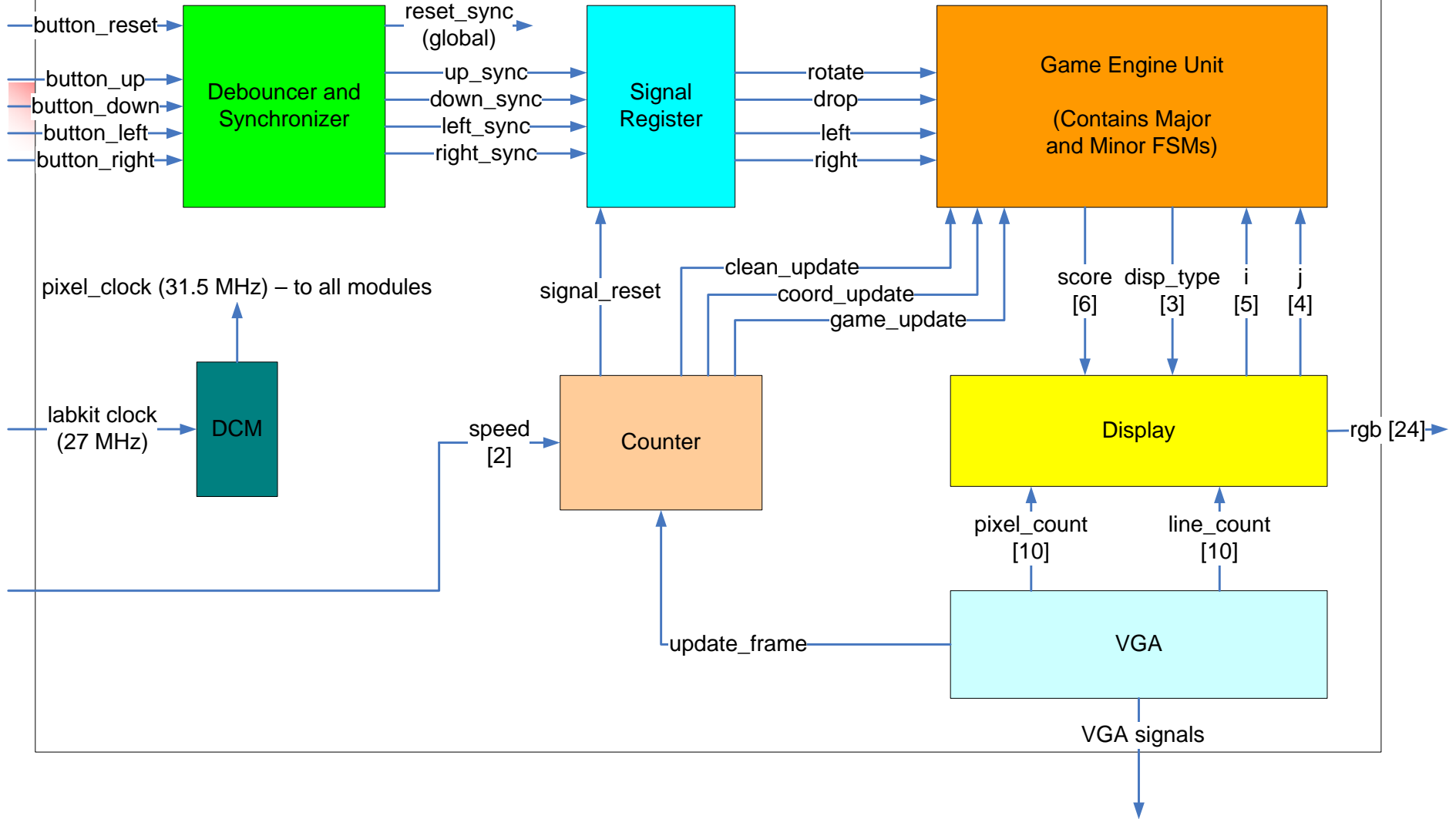
Snapshot of a
Tetris game on right



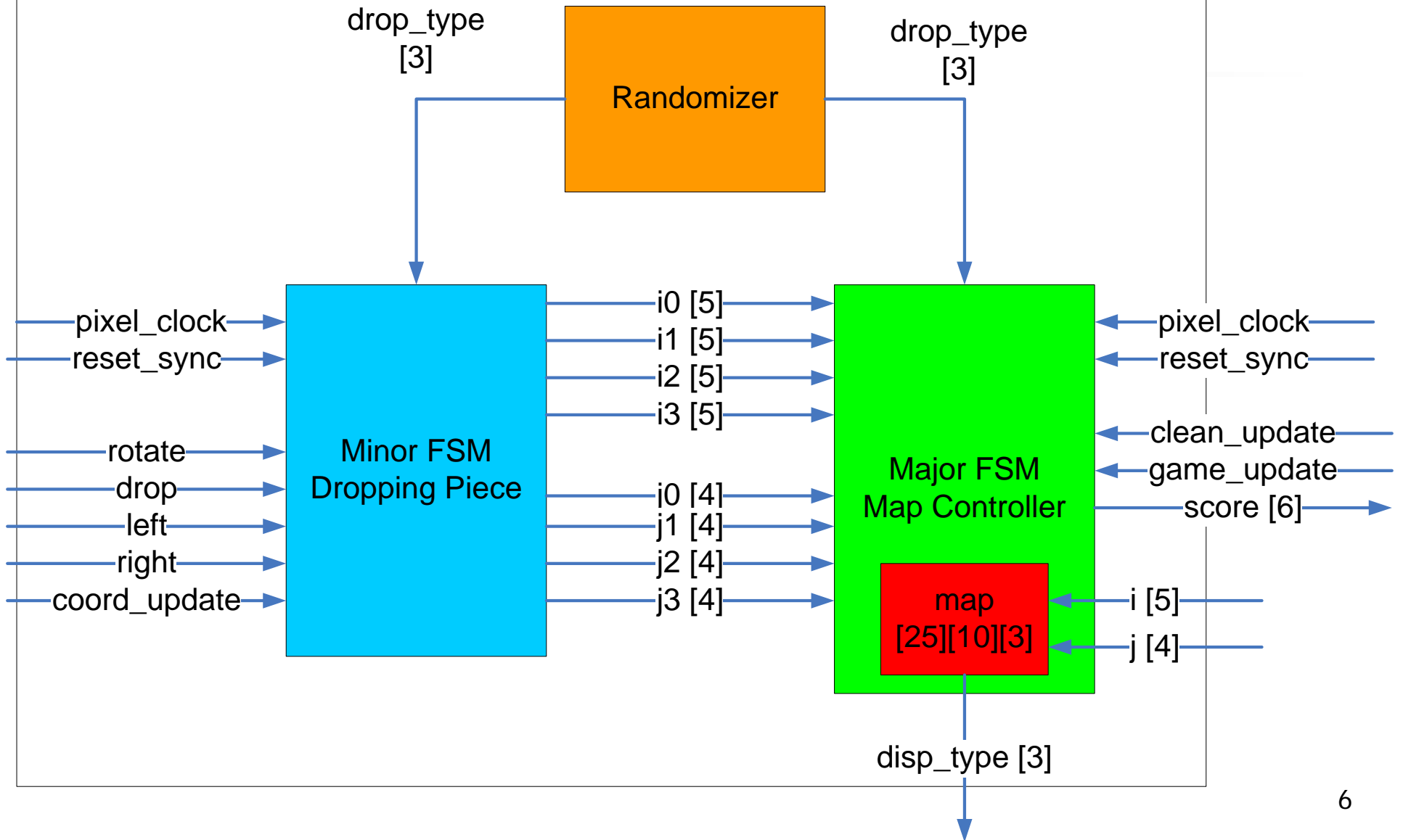
System Overview



Game Engine Unit & VGA Display Unit



Game Engine Unit

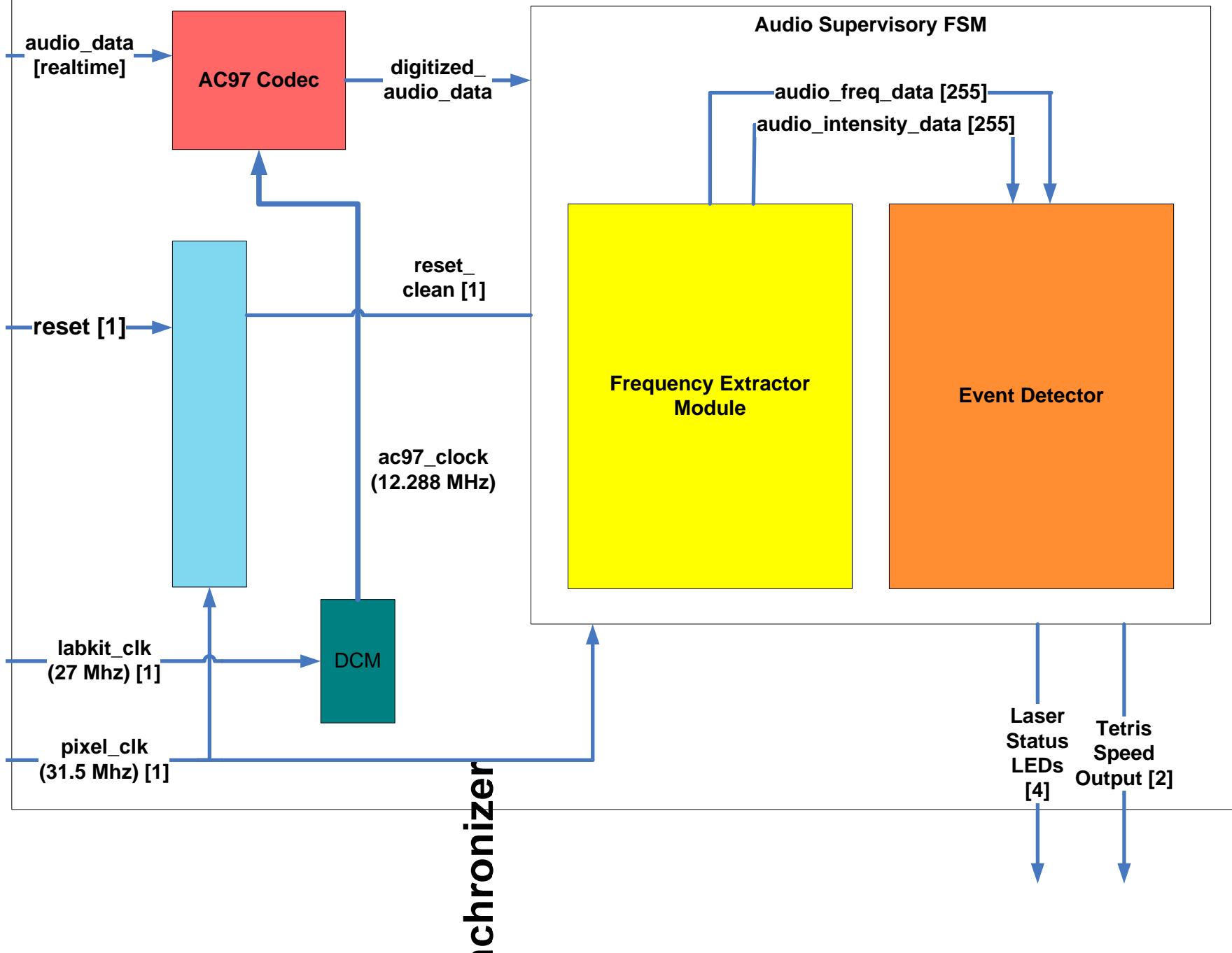




Audio Processing Module

- Audio signal digitized by AC97 codec
 - Sampled at 48khz, 18 bit resolution
- Fed through FFT module
- Triggers changes in block speed upon detection of certain frequency intensities

Audio Module





Laser Projection Module

- Laser light shines onto a 10-sided spinning mirror head assembly
- Infrared pulses synchronize the display with the labkit
- Verilog code modulates the laser accordingly

Laser Module

