A Voice Modulator

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Features

• Inputs
  – Voice audio from microphone
  – Keyboard chords
• Modulate voice to match chord frequencies, preserving overtones
• Outputs
  – Voice at specified pitch(es)
AC97 Interface

Diagram showing the AC97 Interface with components such as Down-Sampler, FFT, Analyzer, FFT⁻¹, AC97 Controller, Parallel/Serial Converters, AC97 Command FSM, and Up-Sampler. Connections include ready, wave[17:0], addr[7:0], sample[17:0], data_in, data_out, bit_clock (global), and others.
VGA Interface
Implementation Details

• Analyze FFT on 256-frame period
• Block RAMs for audio caches
• Downsample as necessary to allow “realtime” playback