Project Title: Realtime Visual Audio Composition

GUI, VGA Output, User Interaction

1024x768 VGA GUI display resembling mockup in proposal/presentation

ASCII text rendering

GUI sprite interaction mouse button clicking

Display of spectrogram with sweeping progress line

Scan line adjustment and shifting (if time)

Graph display of active FFT sample

Colorful FFT display (if time) aka “Fire” effect

Interactive bode plot mouse-dragable point, display of resulting frequency response

Appropriate taps written to filter stage

Image capture with minimum freeze time

Pixel edit mode with free-form line drawing capabilities (if time)

Individual Fourier transform to two-dimensional view

Selectable pole-zero filter diagram mode (if time)

Regression of bode plot to allow for line smoothing (if time)

Camera Processing, Memory Management

No dropped VGA requests or NTSC input pixels (everything stored in BZT RAM and all requests fulfilled)

Processing of NTSC input into 8 bit pixel intensities
Configurable input processing (if time)

Provide samples to IFFT modules

Provide samples to GUI modules

Editing of sample memory on request from GUI

Audio Output, Filtering, Sampling

Functioning audio output with mute and volume control

Discernible 128 tap filter functionality at least with dummy tap values

Recognizable figures in spectrogram of audio output as measured with external signal analyzer or laptop. For example, smiley faces, straight lines, periodic dots

Pausing/unpausing and restarting of IFFT module with no audio artifacts (audio output muted until valid output available)

Full 48 kilosample AC97 output (upsampled from 24 kilosamples)

Vector interpolation

Variable vector interpolation to adjust playback speed (if time)

720 sample to 1024 sample vector conversion

Stereo output using main/overlay as left/right channels (if time)