ANALOG SCOPE TV

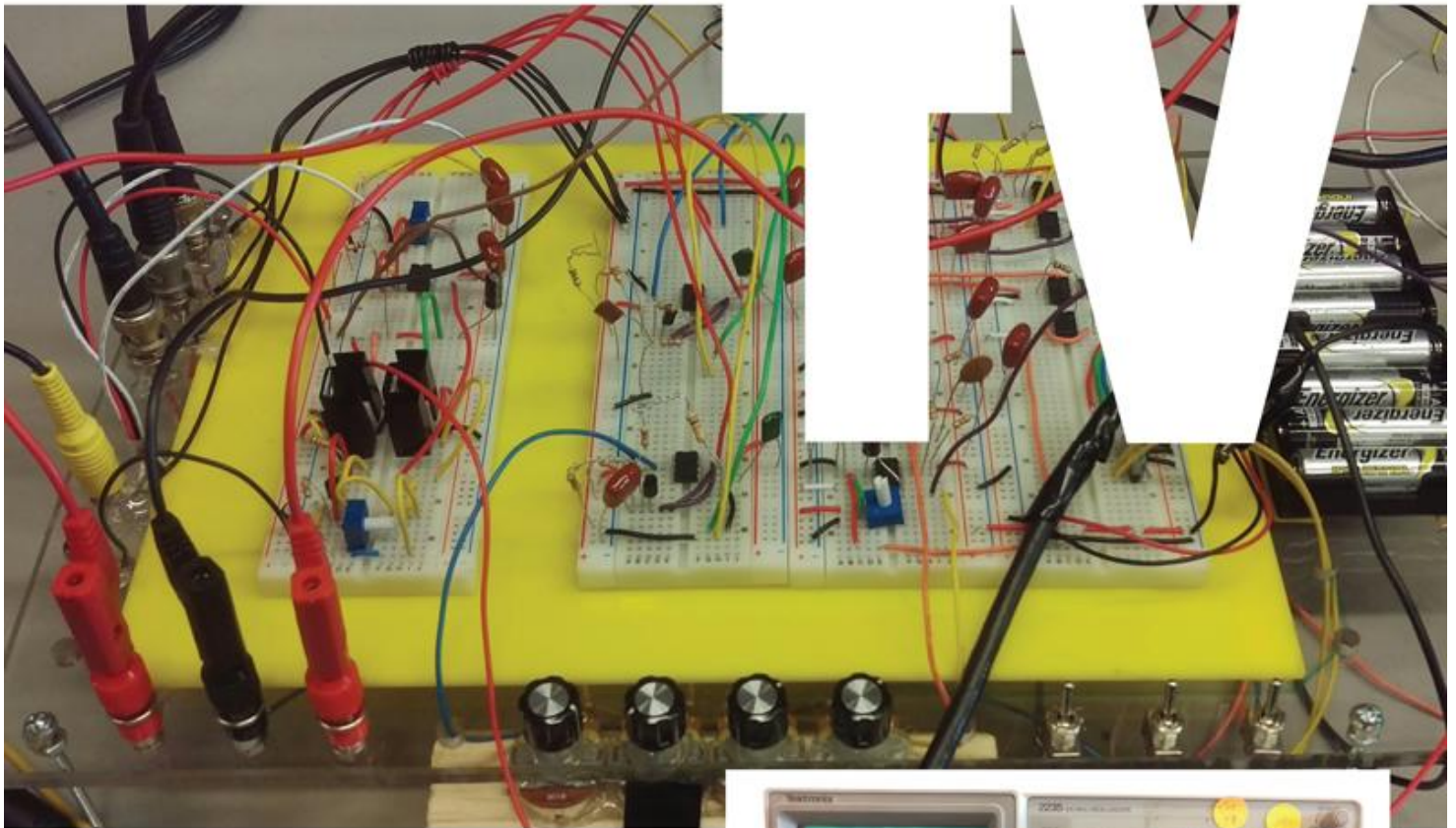**MATTHEW CAVALLARO** EE'18
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The Analog Scope TV is a circuit that allows for both composite and component video signals to be displayed on an analog oscilloscope in XY mode. The video frames are drawn by producing a raster scanning pattern with saw-tooth 7555 oscillators on the X and Y inputs of the scope, triggered by the vertical and horizontal sync signals of the analog video input, mimicking the operation of a CRT display. The Z-axis component of the scope display will be used to produce a green-scale image by taking the luma (achromatic intensity) component of input video signal. For the component VGA input, this is accomplished via a mathematical transform from the RGB colorspace into a luma component, realized via a summing amplifier. For the composite NTSC, a sync separator is implemented using Op Amps to both demodulate the luma component and recover the frame synchronization information. Additional features include knobs to adjust resolution and color intensity, as well as a portable power source for the main circuit. An audio system was also implemented with an audio amplifier, a volume control knob, and a speaker. This subsystem is powered by a fifteen volt rail-to-rail power supply for significant amplification of audio components.