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Abstract

Commercial laser light show equipment is typically expensive and its functionality is often limited. A laser light show system based on FPGA control of off-the-shelf laser diodes and mirror galvanometers can offer a cheaper and more flexible system in terms of customizable functionality.

The FPGA is used to control the movements of two galvanometers and the timing of the laser to produce a projected image on a surface. The laser is reflected off of the galvanometer-controlled mirrors mounted perpendicularly; the angle of the mirrors controls the deflection of the laser beam along the x- and y-axes. The projections can be controlled by both live music and pre-made data files. Live music would be fed into the FPGA to be filtered and converted into analog signals for the galvanometers while data files provide a series of x,y-coordinates to be used to compute angle commands for the galvanometers.