Our brain encodes information via patterns of action potentials (APs) produced by neurons. This is referred to as the neural code. Studies of the neural code have shown that two methods of information encoding exist: rate codes employ rate differences of APs, while temporal codes employ timing difference of APs, to encode information. Two of the major classes of interneurons in the neocortex, parvalbumin positive (PV+) and somatostatin positive (SST+) interneurons, have properties that may enable them to specialize in transmitting information using temporal and rate codes, respectively. However, technology that provides the spatial and temporal resolution required to study the neural code in PV+ and SST+ interneurons has been out of reach until recently. In this thesis, I have developed a system to use optogenetics paired with a digital multimirror device for patterned optogenetic stimulation. First, I demonstrate the system’s ability to control APs in individual neurons at physiologically realistic rates. I then demonstrate that this system can be used to create *in vivo*-like patterns for presynaptic activity for specific interneuron types in *ex vivo* brain slices. This system can be used in future studies of the neural code to determine the role of PV+ and SST+ interneurons in rate and temporal coding.