

Owner	Commitment:	Subtasks	Detail
		Lightsaber makes sound effects for movement in all 3 axis, using a 9V battery power supply	
Elizabeth		Acceleration x, y, and z components integrated into a single measurement that takes polarity into account	
			Voltage output from accelerometer is converted into current, then is added to some source current created using current m Toe touch:
Elizabeth		Integration of total acceleration to retrieve velocity	
			Sallen-Key LPF used as an integrator, with a frequency cutoff of 60Hz maximum
Jing + Elizabeth		Use of 9V battery power supply	
			Minimize usage of op amps and other highly power-consuming components
			Normalization of acceleration and velocity signals to virtual ground at 4.5V
Jing		Creation of sounds	
			Phase shift oscillators to provide various low frequency audio signals
			Voltage controlled oscillator to create variable frequency signal
Jing		Modulation of signals to create lightsaber sound effect	
			Signals modulated in frequency and amplitude through modulation circuit
			Amplifier for soundwave output to speaker
Owner	Goal:	Subtasks	Detail
		Hitting effects play when lightsaber hits something, and lightsaber module turns off when not in use	
Elizabeth		Recognition of moment of contact	
			Sallen-Key HPF as a module to take the derivative of acceleration, which is fed into a comparator that outputs HI when input signal is greater than threshold voltage, or LO otherwise
Jing		Hitting sound effect	
			Oscillators and modulation for sound generation, higher frequency
			Mixer for combining impact sound with regular movement sound effect
Jing + Elizabeth		Timer that checks duration of non-movement	
			Velocity signal rectifier circuit that feeds into comparator to VG, outputs LO when input signal is greater, or HI otherwise. HI signal charges up a capacitor, whose voltage is the input to a MOSFET switch. When switch is on, accelerometer inputs are pulled to ground.
Owner	Stretch	Subtasks	Detail
Jing + Elizabeth		Use of 2 AA battery power source with power reduction via an on switch upon detection of movement	
		Increase voltage pumped into system	
			Use of boost converter with corresponding astable oscillator made with Schmitt Trigger topology to ramp up voltage
		Further minimize power consumption of circuit	
		Accelerometer change in voltage used to turn on circuit	
			Timed circuit switch using accelerometer voltage with respect to baseline voltage due to gravity as an input
Jing + Elizabeth	Extra effects		
		Light effects	
			LED that turns on when lightsaber is waved