Omar Elsewify Project Objectives

* Develop a code to represent the Li-Ion battery in 2 dimensions as a set of nodes representing temperature. This code should model the thermal dissipation over time and represent the time dependent behavior of the battery.
* Compare results from code to previous research done to check correlation
* Compare code results to experimental data previously collected
* Change the voltage and current that the battery utilizes and examine the effect of changing these parameters with regards to heat generation
* Consider active cooling setups which utilize a range of cooling fluids (air, refrigerant, water)
* Consider passive cooling using heat pipes and phase changing materials and examine how each affects the thermal distribution in the battery.
* Consider different setups of cooling setups including combinations of two cooling kits
* Find an optimal operating setup which reduces the temperature gradient while also allowing for a high-power output
* Provide context for how the optimal setup will improve performance (i.e. effect on maximum power output, battery life and possibly charging/discharging speeds)
* Make a reasonable supported conclusion as to what optical cooling technique is that the car industry should consider moving forward.