This thesis is about the study and development of Solar Panel Emulator. It is a device which will emulate the desired Solar Panel IV characteristics. It will allow to test many appliances which run on solar power or applications of solar power. Chapter 1 summarizes the need of the product, functionality of the product, literature survey, market survey and user survey. From these surveys the gap analysis is made and a wish specification of the product is laid down.

In Chapter 2 identification of various modules that are required to build the product is done. Various stimuli to each and every module is discussed and a block level diagram of the product is drawn. After performing the study of each and every module and keeping in mind the wish specifications a target specification is laid down at the end of this chapter.

In Chapter 3 the detailed design of each and every module is given. Circuit schematics of all the hardware modules and algorithm flow charts of all the software modules is detailed. Design of various components for achieving the target specifications is detailed in this chapter. In Chapter 4 the engineering and fabrication of the product is given. All the details regarding the PCB layout, routing, mounting and assembly of the hardware modules is given. The pseudocode design of all the software modules is included. A first level embodiment design of the product is detailed at the end of this chapter.
In chapter 5 an imaginary entrepreneurial plan is discussed. Plan regarding building of team, raising the funds, marketing strategy, risk mitigation, business scale up are detailed. Chapter 6 finally concludes with the suggestions for next generation and future scope of the product.