

Introduction: Part 1

1.1 Problem Statement:

Our client needs a more efficient and automated way to test different photosensitive devices and how they respond to different wavelengths of light through a medium of different gasses. Currently, when testing these devices' capabilities, the process is manual, making it arduous, expensive, and time-consuming. We will solve this problem by automating the testing process and collection/interpretation of data.

1.2 Intended Users and Uses:

User 1: Perovskite solar cells researcher

1. *Key characteristics* - Research on solar cells currently available in the market and improve the efficiency of the solar cell.
2. *Needs related to the project* - A more efficient way of testing the solar cell or solar panel.
3. *How they might use or benefit from the product you create* - They could use this project to do a test on the solar panel without any knowledge of operating the automated testing device.

User 2: Photodetector manufacturer

1. *Key characteristics* - Produces mass quantities of precise photodetectors that must adhere to specifications
2. *Needs related to the project* - Photodetectors from each manufacturing run should be tested to ensure quality of the product is consistent and meets specifications.
3. *How they might use or benefit from the product you create* - It would allow for the manufacturing process to get faster feedback on the quality of their process if they can quickly test units, and make adjustments to the process if needed.

User 3: Students

1. *Key characteristics* - Students attending the university that are studying photosensitive devices.
2. *Needs related to the project* - Needs the machine to be intuitive and flexible for testing devices.
3. *How they might use or benefit from the product you create* - Students can experiment with different devices and learn about how testing these types of devices works.