**Project Title:** *ECRL (Eye Comfort Reading Light)*  
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**Project Progress Update**

Since the previous report, we have made substantial advancements in the theoretical, practical, and software aspects of our project. Notably, we have successfully implemented a dual-LED configuration, in which each LED operates independently and adjusts its brightness based on ambient light intensity. This feature has been fully developed and documented via recorded video evidence.

Following our earlier commitment in Report 2, we have shifted focus toward color blending. Specifically, our objective is to merge yellow and white LEDs to produce a reading light that is both visually comfortable and biologically appropriate. In pursuit of this goal, we revisited previously gathered survey data concerning optimal lighting conditions for eye comfort.

Furthermore, we have developed comprehensive software capable of managing both intensity and temperature components of ambient light. The intensity control functionality is already complete, and we have now implemented a separate temperature control module. These software modules are currently prepared for upcoming testing phases.

Despite this progress, several challenges have emerged, as outlined below.

**Challenges Encountered**

1. **Hardware Limitations**  
   As noted in our second report, one of the key technical limitations stems from the use of standard LEDs and photocells, which exhibit non-linear behavior. This restricts the precision of brightness modulation and, by extension, affects the effectiveness of light temperature adjustment. We have not yet addressed this limitation, as our priority has been to complete the core system. However, we anticipate returning to this issue during final optimization stages to enhance overall system performance and user experience.
2. **Sensor Availability**  
   Another persistent challenge is the lack of access to a light temperature sensor. Our expected sensor choice is the TCS34725, but it is currently unavailable locally. In addition, determining optimal threshold and parameter values requires extensive experimentation and iterative software execution, which remains a time-consuming and resource-intensive process.

**Future Objectives**

Our immediate goal is to acquire the required light temperature sensor and then implement and test the corresponding temperature control circuitry prior to full system integration. Upon completion, a fourth report will be prepared to document results and findings. Following that, we will commence the final phase of the project.

**Project Milestones for Next Update**

The following milestones are scheduled for completion prior to the submission of the next report:

* **Procurement of Temperature Sensor:**  
  Acquire the TCS34725 or an equivalent sensor for temperature modulation. *(Estimated delay: +2 days if online ordering is required.)*
* **Implementation of Independent Color Temperature Control:**  
  Achieve independent adjustment of color temperature for both LEDs in response to environmental light conditions. *(Estimated duration: 1–2 days of experimentation.)*

Based on this schedule, we anticipate submitting the next project update within approximately four days.