

MORNO1E

**Development of a CNN-Based
Facial Recognition System for
Early Signs of Sleep Deprivation
in Students for Health
Monitoring**

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CNN-Based Facial Recognition System for Early Signs of Sleep Deprivation in Students

Introduction

Sleep is essential for students' learning and well-being, yet sleep deprivation often goes undetected. This study, "Development of a CNN-Based Facial Recognition System for Early Signs of Sleep Deprivation in Students for Health Monitoring," aims to identify early signs of sleep deprivation using CNN-based facial recognition and IoT technology. The system enables real-time, automated monitoring to support timely interventions and promote better academic performance and health.



Identify the SDGs

The study mainly aligns with the United Nation's SDG 3: Good Health and Well-Being. By detecting early signs of sleep deprivation, the system promotes mental and physical health among students and supports timely interventions to improve health.



The study also aligns with UN SDG 4: Quality Education. Enhancing students' health contributes to better learning outcomes. Real-time monitoring by the system supports a more responsive and supportive educational environment.





Statement of the Problem:

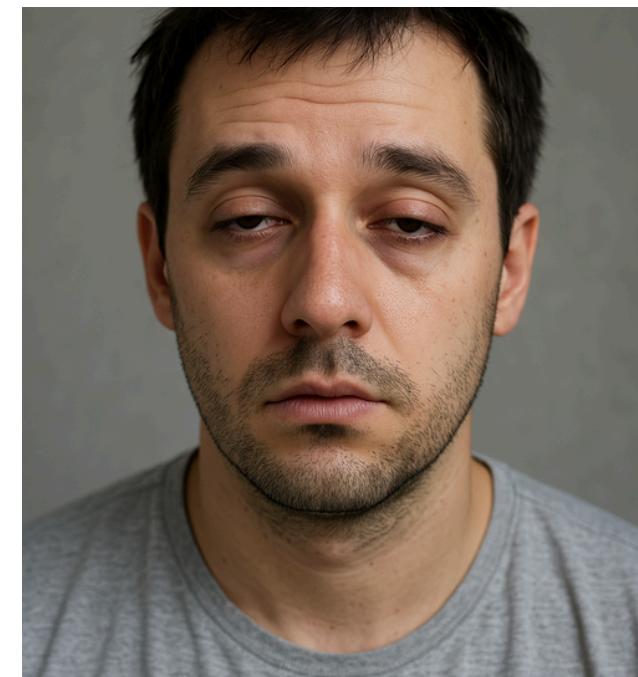
Sleep deprivation among students is a persistent issue that negatively impacts academic performance, concentration, and overall well-being. This study aims to develop a CNN-Based Facial Recognition System for Early Signs of Sleep Deprivation in Students. This system leverages Convolutional Neural Networks (CNN) to provide an efficient and user-friendly facial recognition tool capable of identifying early indicators of sleep deprivation based on facial expressions.



Statement of the Problem:

The Study specifically will address these problems:

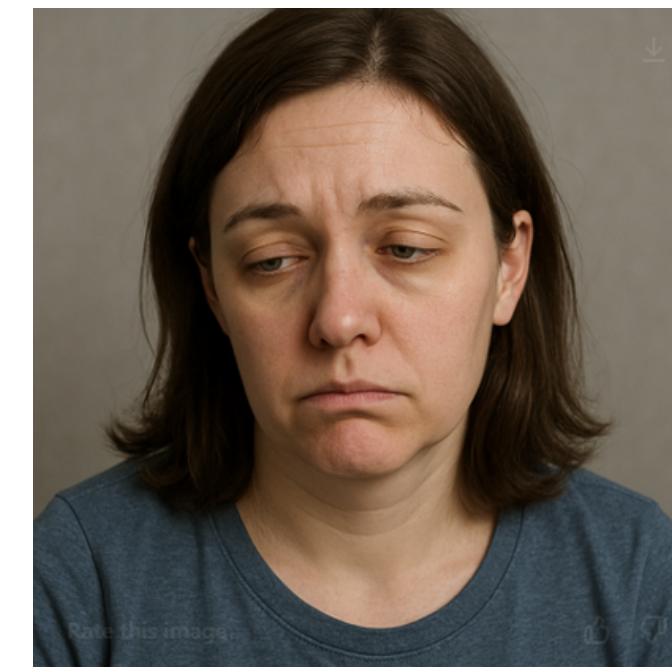
1. What specific facial expressions or behavioral patterns will be analyzed to detect early signs of sleep deprivation?
2. How will the system be tested in real classroom settings to ensure its effectiveness?



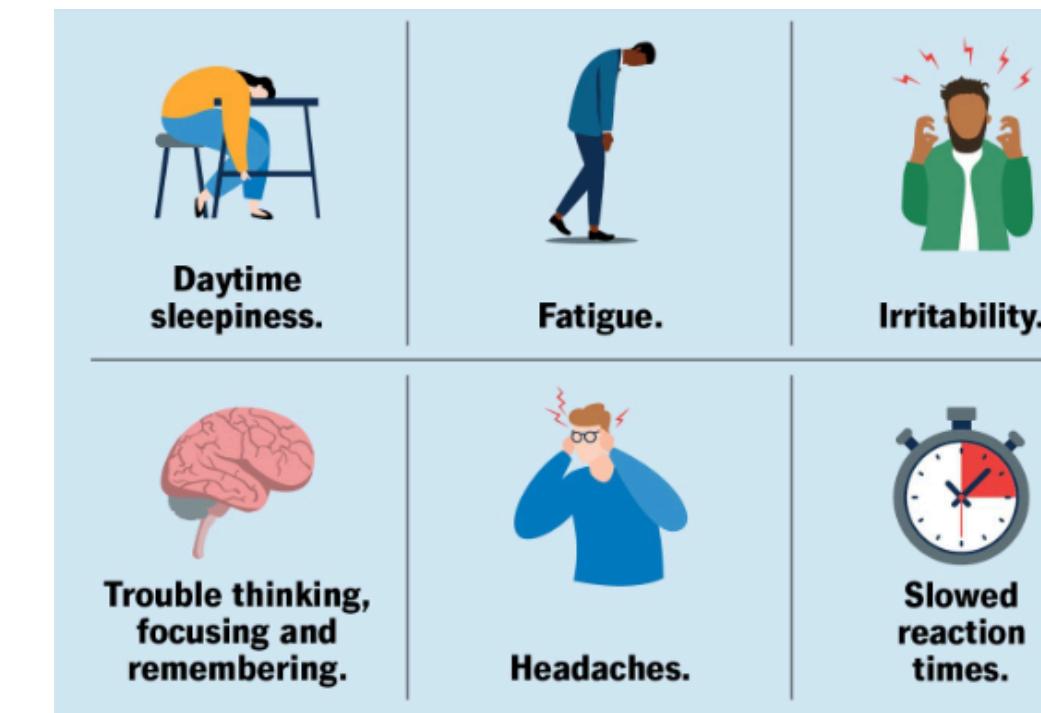
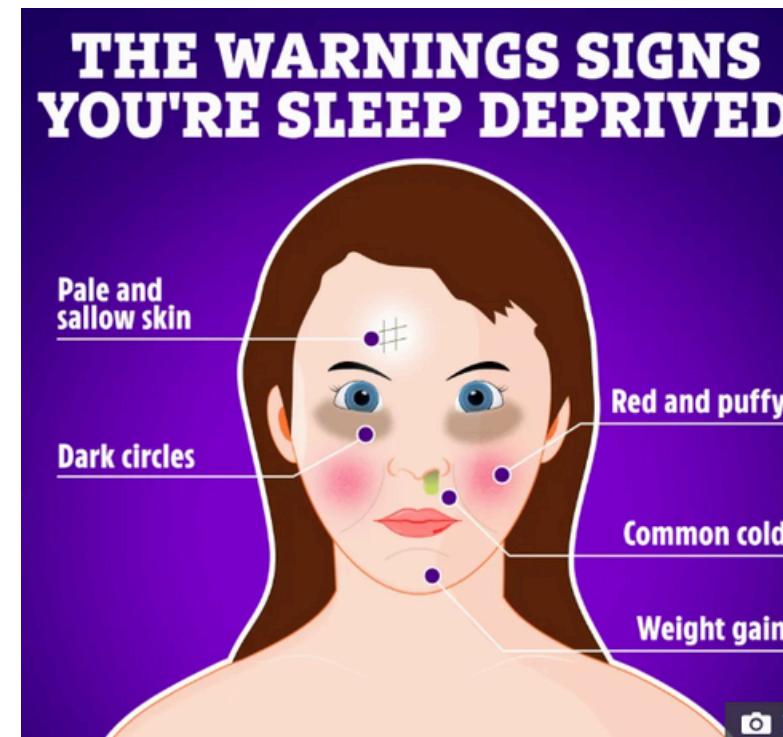
Droopy Eyelids

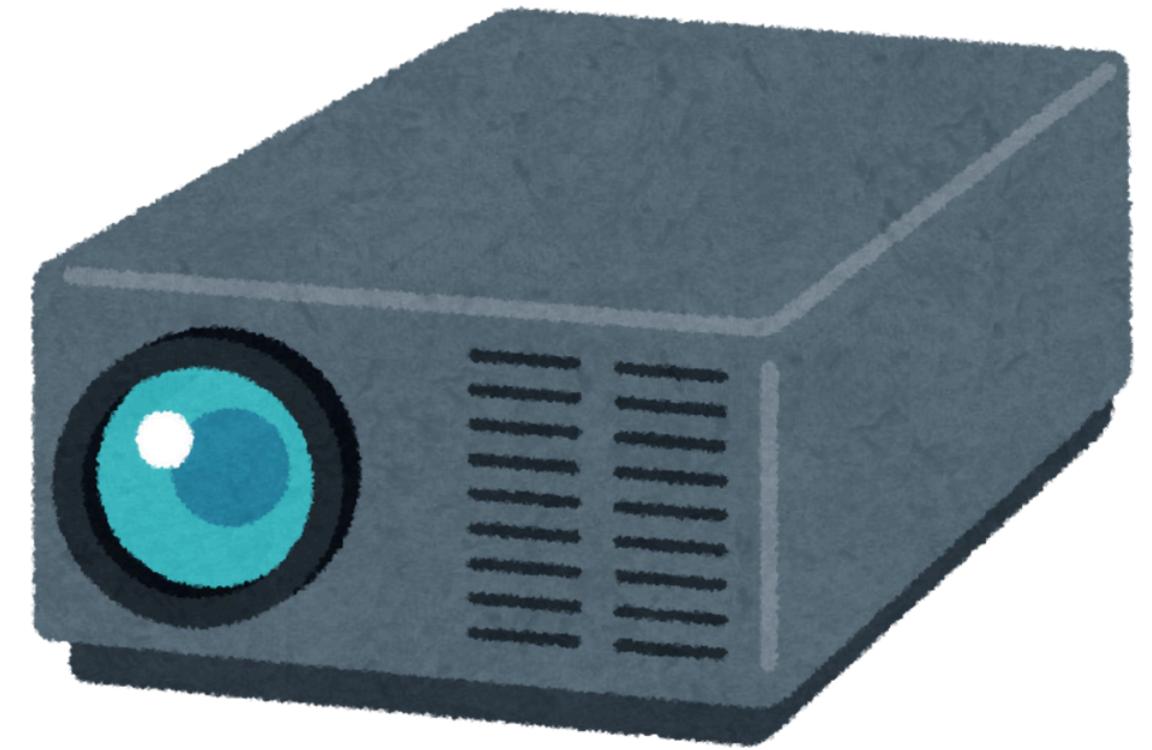


Eye Rubbing



Fatigue







Objectives of the Study:

The primary objective of this study is to create and develop a "CNN-Based Facial Recognition System for Early Signs of Sleep Deprivation in Students." This system aims to provide functionalities such as accurate facial recognition, as well as monitoring indicators of sleep deprivation based on facial changes.



Objectives of the Study:

Specifically, this research aimed to:

1. *To create a user-friendly facial recognition system using Convolutional Neural Networks (CNN)*
2. *To incorporate features that help identify early signs of sleep deprivation in students by analyzing their facial expressions and behaviors.*
3. *To test the system in real classroom settings to ensure it accurately recognizes students' faces and functions effectively under different lighting and conditions.*



Objectives of the Study:

Specifically, this research aimed to:

4. To evaluate the system's performance based on ISO 25010 quality characteristics

Key metrics include functional suitability, performance efficiency, reliability, usability, and security, ensuring the system meets technical and user standards.



Significance of the Study

- The study will help students by identifying early signs of sleep deprivation so students can get support to improve their health and performance.
- This study can be used as a reference for others working on AI and facial recognition projects in education. It may inspire new ideas for improving technology that supports students and schools



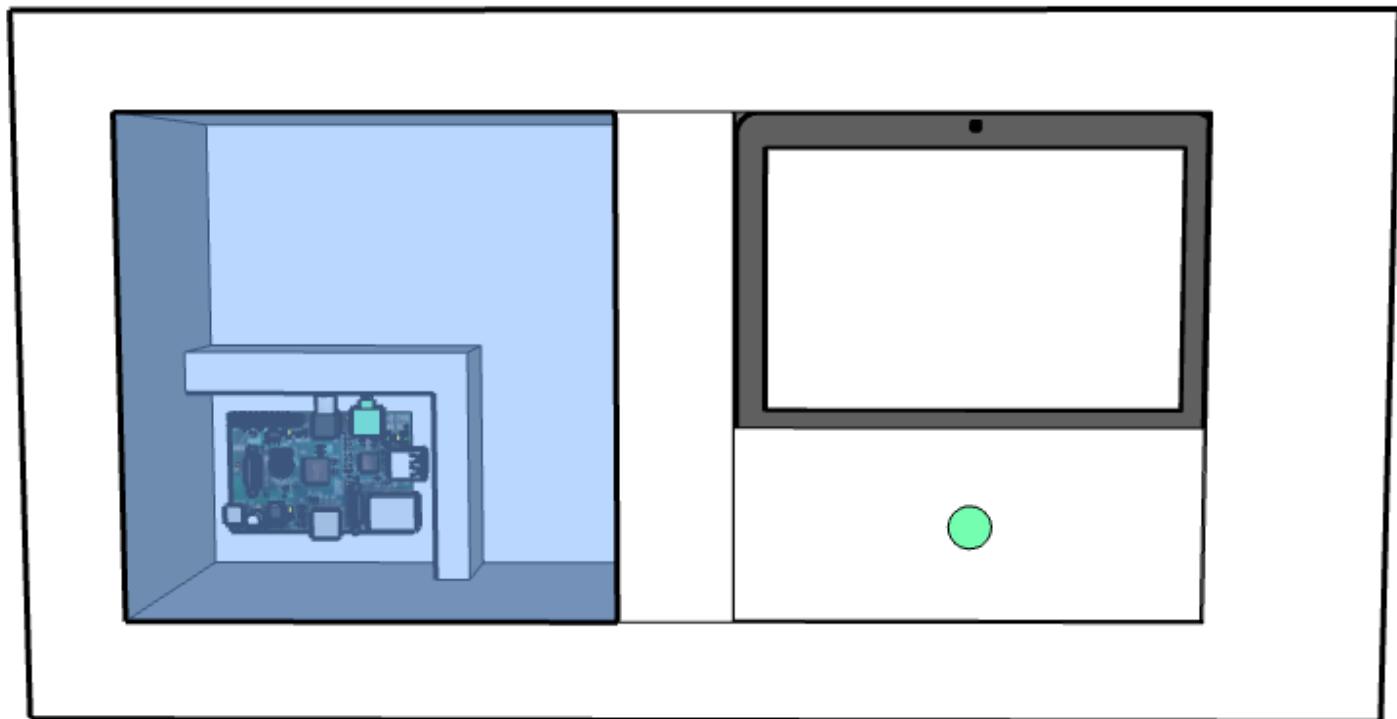
Target Beneficiary of the Study (Significance of the Study).

- Students
- School Faculties / Staffs
- Future Researchers



Design of Prototype/Application

 SketchUp

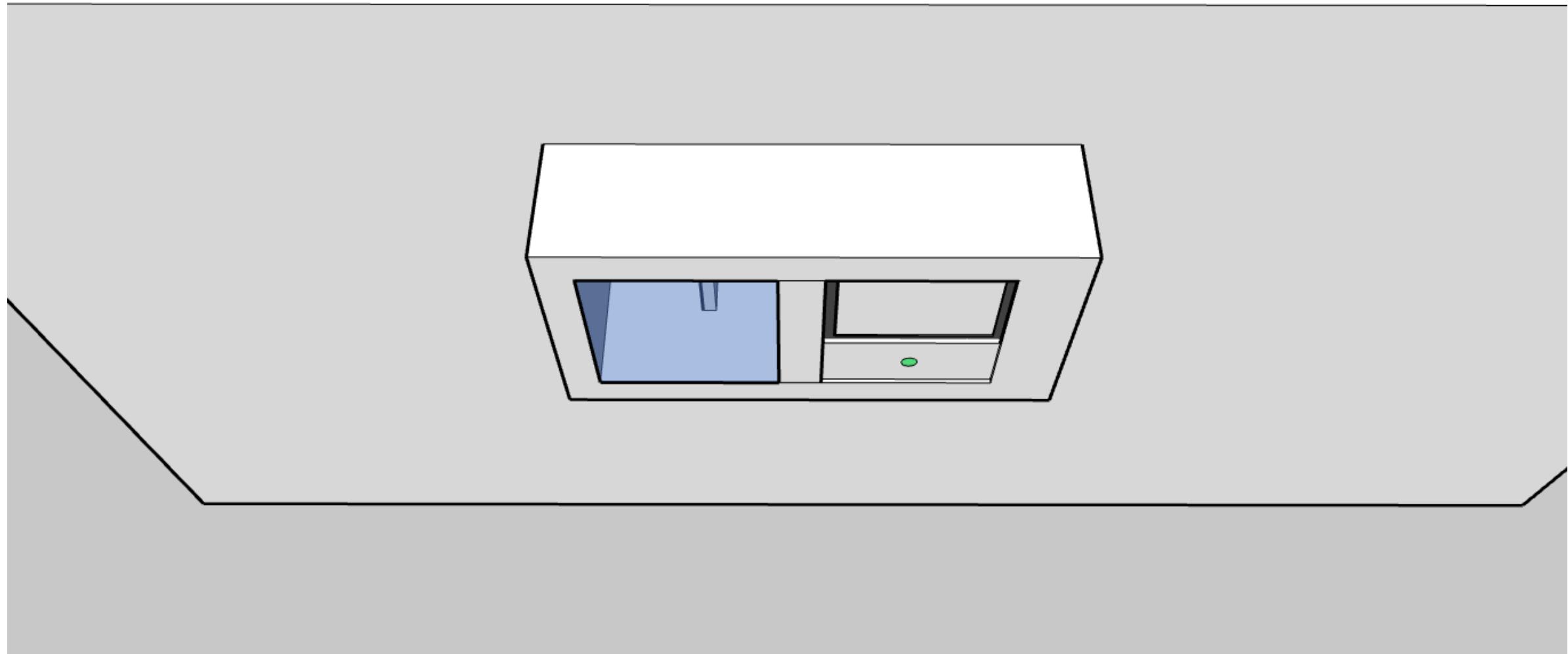


Front View



Design of Prototype/Application

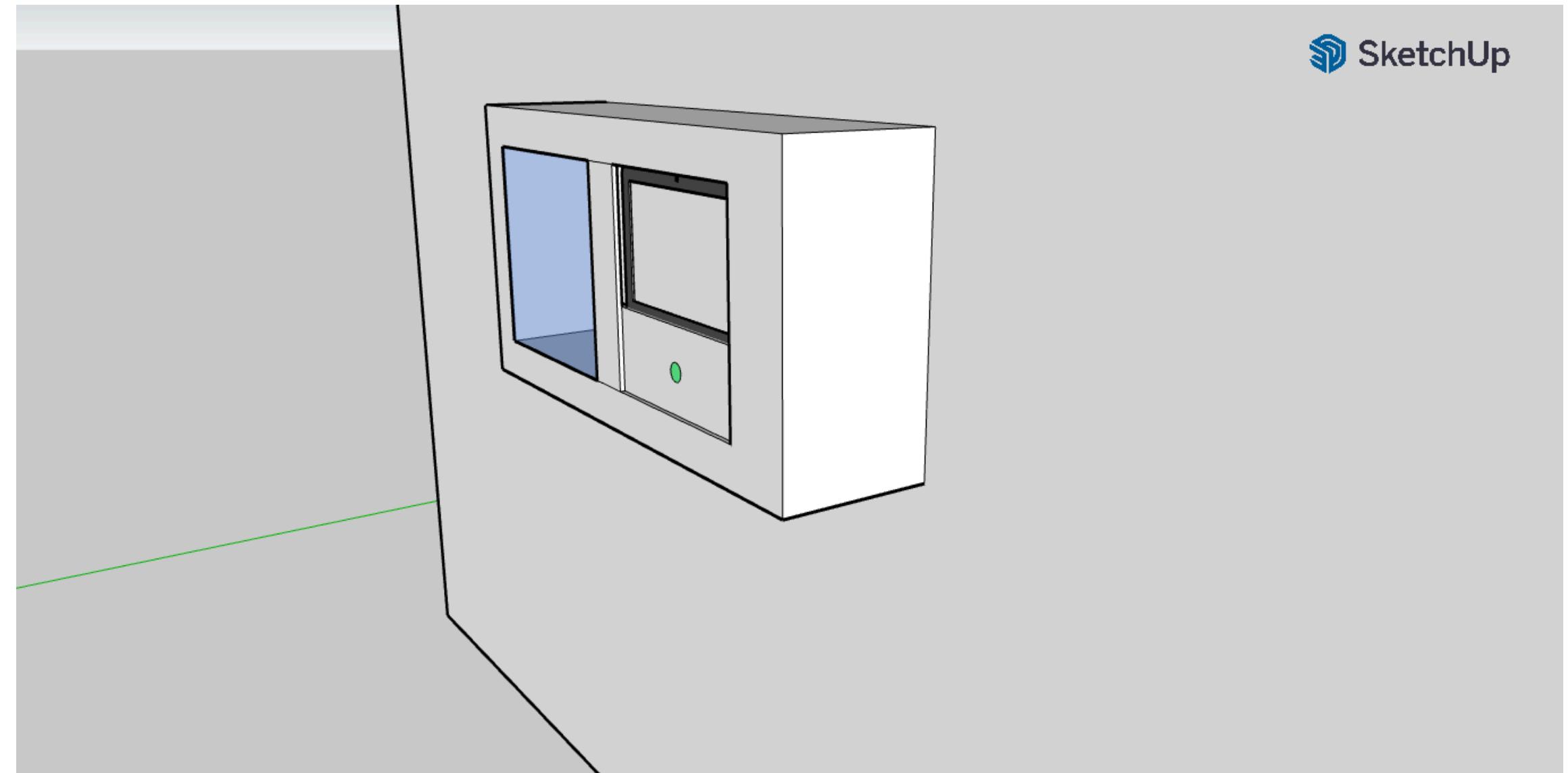
 SketchUp



Top View



Design of Prototype Application



Side View



- End -

Thank You