SAFEGUARDING VIEWERS FROM EPILEPTIC TRIGGERS
Detecting Seizure Inducing Scenes in Videos

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1. Background

Photosensitive epilepsy affects 65+ million worldwide. Digital media, especially platforms like YouTube, contains potential triggers for those with this condition. Much content lacks seizure safety vetting, limiting inclusive viewing experiences.
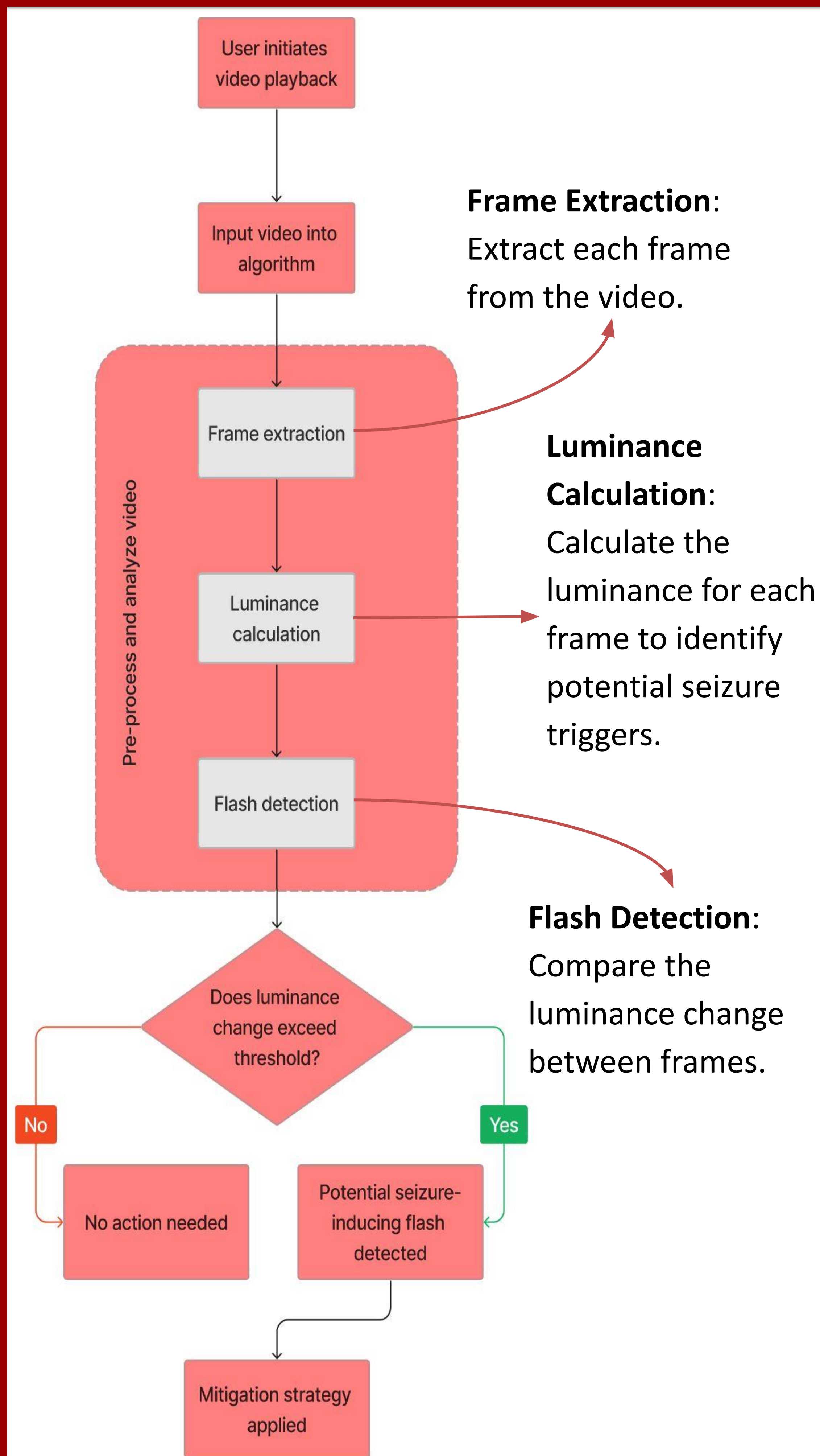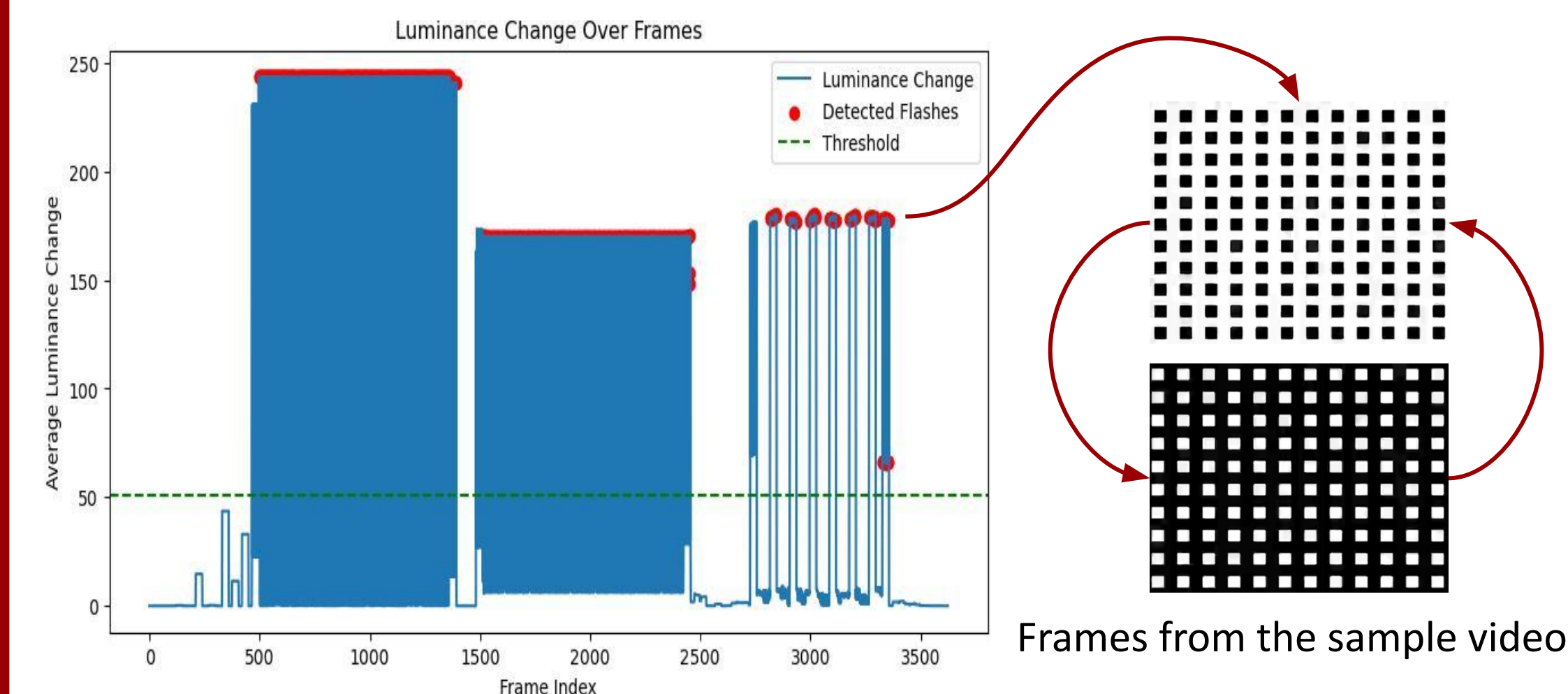
2. Introduction

SHEDDING LIGHT ON EPILEPSY: OUR TECH SOLUTION

Our tech solution aims to make viewing safer for those with epilepsy. Using advanced computer vision, it analyzes movies frame by frame, identifying scenes with rapid color shifts or high-contrast patterns that could trigger seizures. This proactive approach mitigates risks for viewers and promotes inclusive digital media practices.

3. Methodologies

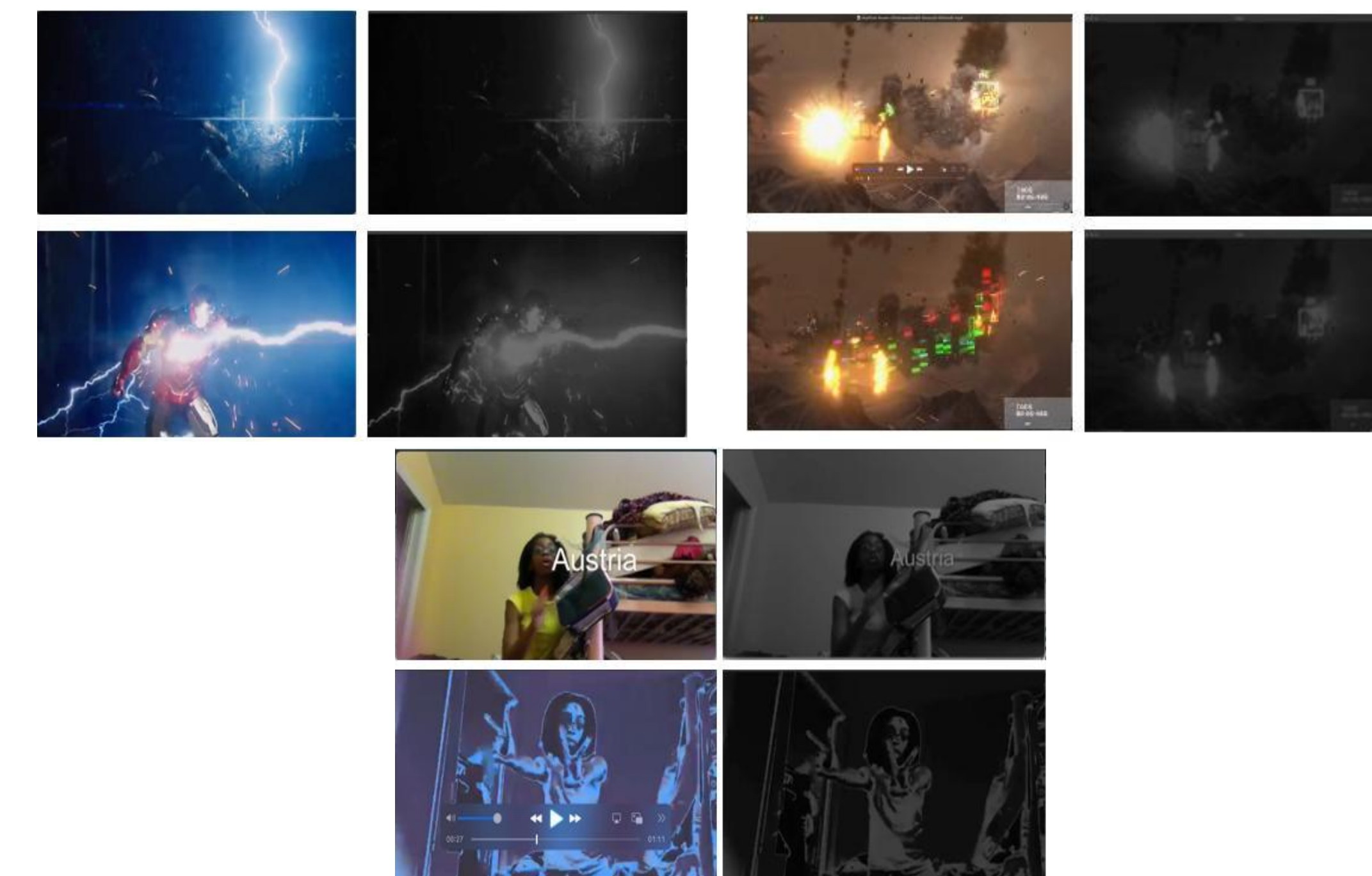**WHAT CAN BE CONSIDERED AS A SEIZURE-INDUCING FLASH?**

Web Content Accessibility Guidelines (WCAG):The **WCAG 2.0** and **2.1**, **Success Criterion 2.3.1**, outline guidelines to prevent seizures triggered by flashing content. It mandates that web content should not flash more than **three times in any one-second** period.

Frames from the sample video

Flowchart

User initiates video playback

Input video into algorithm

Pre-process and analyze video:
- Frame extraction
- Luminance calculation
- Flash detection

Does luminance change exceed threshold?

- No → No action needed
- Yes → Potential seizure-inducing flash detected → Mitigation strategy applied

Frame Extraction: Extract each frame from the video.

Luminance Calculation: Calculate the luminance for each frame to identify potential seizure triggers.

Flash Detection: Compare the luminance change between frames.

4. Results

BEFORE AND AFTER: RESULTS OF SEIZURE TRIGGER DETECTION AND MITIGATION

These images depict a safety measure where potentially seizure-inducing flashes are identified and modified into grayscale with reduced intensity, minimizing the risk for viewers with photosensitive epilepsy.

5. Challenges

- Minimizing false negatives (missing triggering scenes).
- Scarcity of traditional datasets for seizure-inducing videos, which hinders the ability to accurately quantify the effectiveness of the implemented safety measures.

6. Future Work

- Algorithm optimization, compatibility with different video formats, and rigorous testing for deployment.
- Model generalization.

7. References

- [1] Detecting and defending against seizure inducing GIFs in social media.
- [2] Detection of flashy segment in YouTube videos using computer vision technique to prevent seizure in epilepsy patients.