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Florida International University

Summer 2025 Capstone II Project

YouTube Video Tracking in Qualtrics

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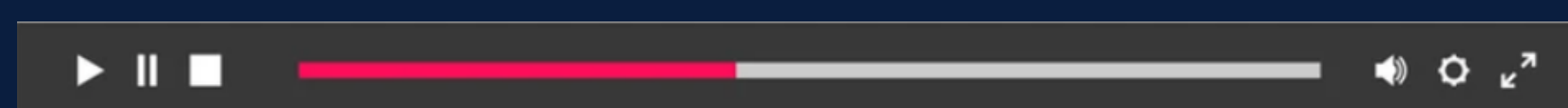
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Instructor/Faculty: Masoud Sadjadi, Florida International University



PROBLEM

Professor often assigns instructional videos to their class via Qualtrics but has no way of verifying if students are actually watching the videos. Unfortunately, the built-in timers do not reflect real engagement and can be bypassed through different methods such as skipping through the video or playing at 2x speed. Therefore, verifiable engagement metrics must be developed in order to ensure requirements are met before the student can proceed.



SYSTEM DESIGN

The solution integrates the YouTube IFrame API with Qualtrics SurveyEngine. A controller listens to player events (ready/state changes), polls playback time on a short interval, computes watch progress, and detects skips by comparing expected vs. actual time. A gatekeeper toggles the Next button based on rules. A data module writes metrics to Embedded Data fields.

Video completed successfully. The Next button is now available!

VERIFICATION

After Finishing up our project we ran countless tests to make sure all our features were working properly to make sure users don't have a negative experience.

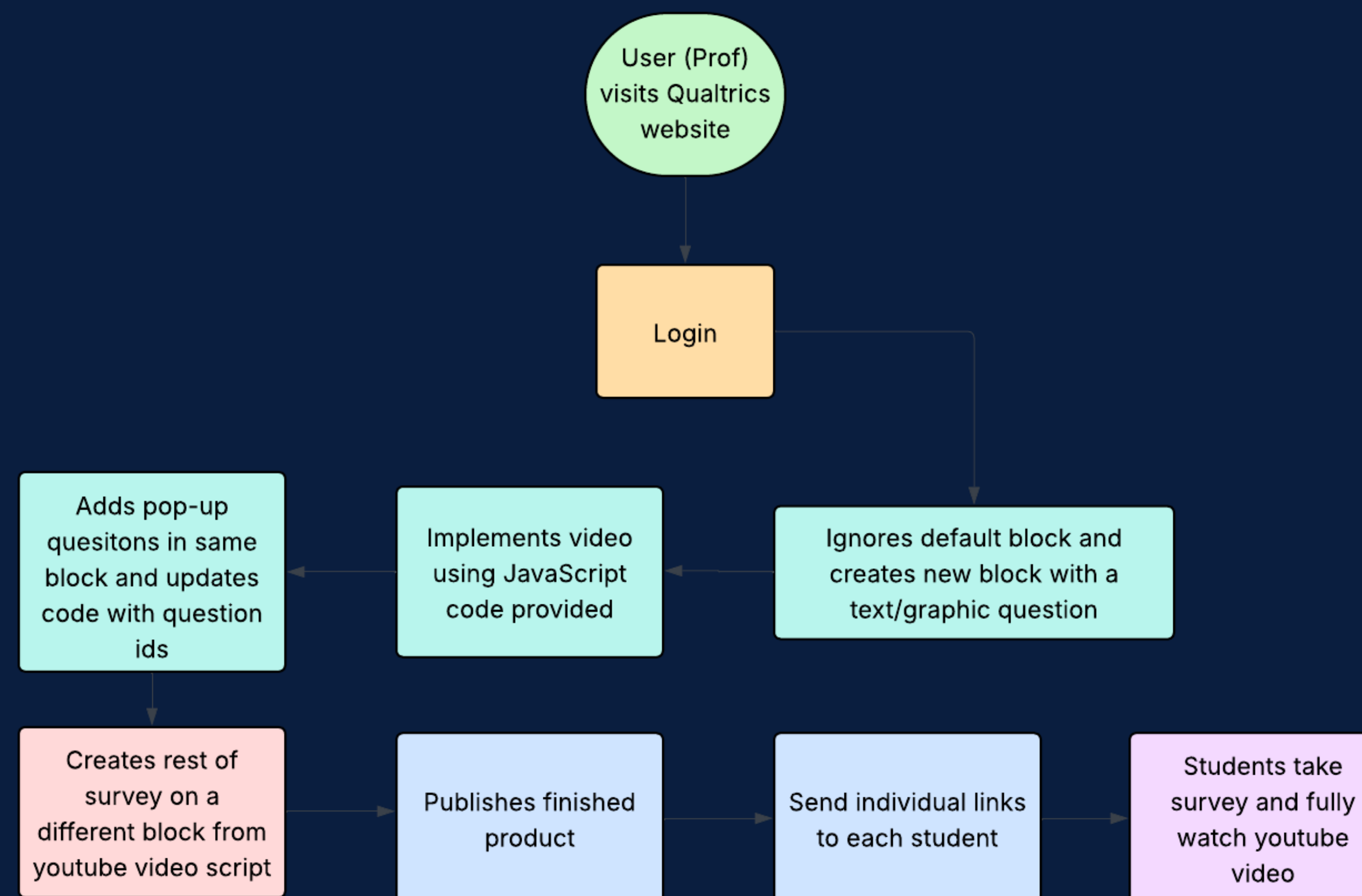
- Threshold tests – making sure that the proper percentage watched would trigger the video as complete
- Skip tests – making sure that through no means can a user skip through the video
- Playback tests – making sure users are not able to speed up the video past 1.5x

Every aspect / feature of our project was tested rigorously to prevent any future flaws.

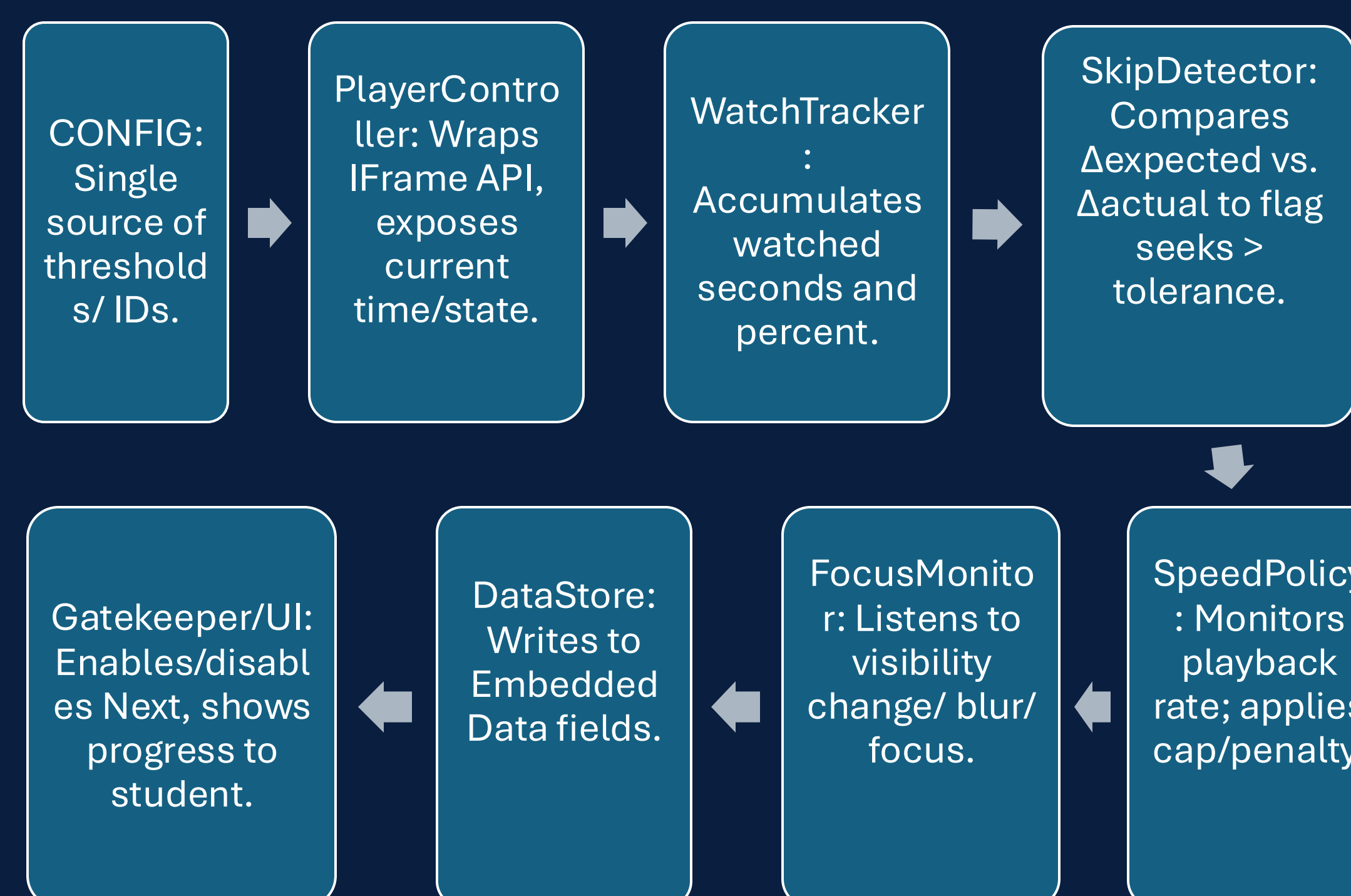
ACKNOWLEDGEMENT

The material presented in this poster is based upon the work supported by Alejandro Arrieta. We thank Alejandro Arrieta for his assistance and mentorship that we received throughout the senior design project.

CURRENT SYSTEM



OBJECT DESIGN



SUMMARY

We delivered a plug-in Qualtrics script that enforces real video engagement and writes audit-ready metrics to Embedded Data.

The script blocks skipping and excessive speed, tracks focus and unlocks progression only after requirements are satisfied.

Future work: multi-video aggregation, LMS gradebook integration, analytics dashboard.

REQUIREMENTS

Functional:

- Enforce watch threshold (e.g., $\geq 90\%$) before enabling Next.
- Detects and logs seeks/skips beyond a tolerance (e.g., > 3 s).
- Limit max playback speed (e.g., $\leq 1.5\times$) and flag violations.

Non-functional:

- Works in major browsers and mobile (user-initiated play as required by mobile policies).
- Minimal performance overhead; robust to buffering/network jitter.
- Clear documentation for instructors; accessibility friendly (captions supported)

IMPLEMENTATION

- Tick loop: interval (e.g., 250–500 ms) samples `player.getCurrentTime()`; integrates watch time only when playing.
- Skip detection: if $\text{actual Time} - \text{lastTime} > \text{expectedStep} + \text{tolerance} \rightarrow \text{increment skips}$.
- Speed enforcement: if `player.getPlaybackRate() > MAX_SPEED_ALLOWED` $\rightarrow$ flag event (and optionally pause/rewind/penalize).
- Focus loss: increment counter on `document.hidden` or `window.blur`.
- Gating: Next stays disabled until $(\text{watch}\% \geq \text{threshold}) \ \&\& \ \text{policies OK}$.
- Persistence: write metrics to Embedded Data periodically and on page advance.

