

Enabling REDCap as a Tool for Multimodal Video-Labeling Research

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Introduction

The UPenn AI-4-AI lab is focusing on developing AI-based tools to improve the quality of Ambulatory care. As a part of this initiative, we are exploring how a diverse group of stakeholders can re-imagine the primary care encounter. Our project, CLIPS (Crowdsourcing Likely Insights from Patient Encounter Snippets) uses a survey with embedded video, combined with Amazon Mechanical Turk, to collect stakeholder insights.

- REDCap was determined to be the ideal tool for creating this survey environment
- Goal: Use REDCap to collect data on dynamically served video segments via a crowdsourcing platform

Design Considerations

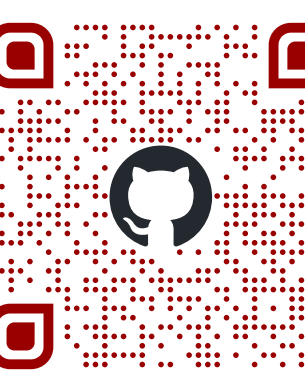
- One universal access point
- Unique, respondent-specific set of videos for each survey attempt
- Dynamically embedded video within the survey
- Minimal opportunity for copying video files

Features

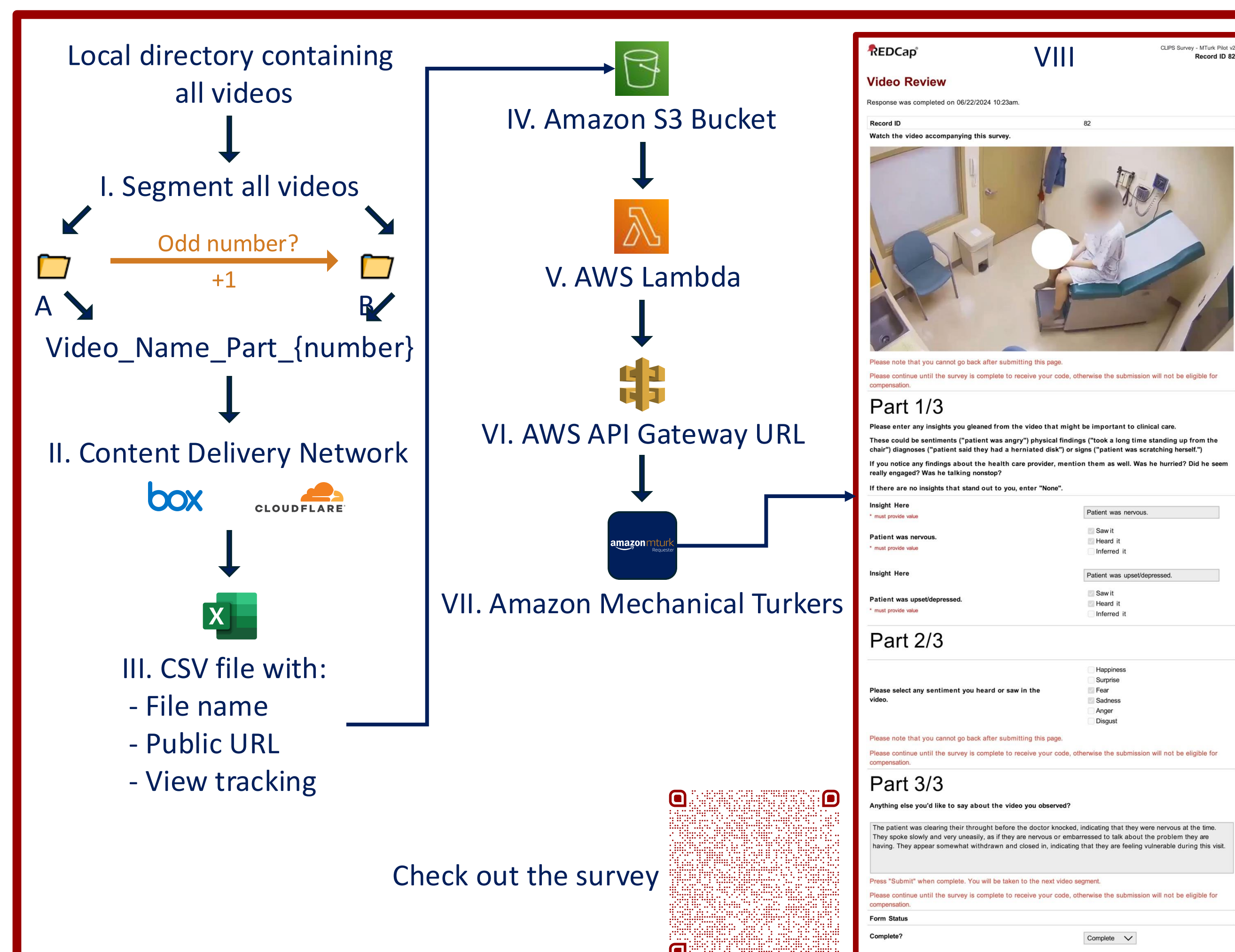
II
Box, Inc. as a content delivery network provider

V
Metadata-driven survey URL generation

VI
One URL with access to multiple surveys

Check out the code


Results



Check out the survey

- Split all videos into 1-minute segments. If a video contains 9 segments, create a batch of the first 4 segments and another batch of the remaining 5 segments.
- Upload all segments to preferred content delivery network (CDN)
- Generate CSV file with embeddable URLs from CDN
- Upload CSV file to Amazon Simple Storage Service (AWS) with Standard Class
- Create a function on AWS's serverless computing service, Lambda, that generates a REDCap Survey URL with batched consecutive video parameters and tracks viewership
- Connect the Lambda function to a single accessible AWS API Gateway URL
- Post AWS API Gateway URL on Amazon Mechanical Turk
- Receive dynamic responses in one survey

Discussion

- Among the content delivery networks tested, Cloudflare Stream and Box, Inc. were the most effective. They provide an efficient method to generate video URLs via API access while restricting download options for respondents. We ultimately chose box:
 - Cloudflare required a UPenn cybersecurity team risk assessment; we decided to move forward with Box.
 - Box embeds well in REDCap but does not allow hiding the login/sign-up header in the survey.
- Survey URL parameter variable fields must be placed on the first page of the survey.
 - Used the @HIDDEN action tag to hide input fields from the end-user, avoiding confusion or distraction from the main survey objective.
 - URL Variables can be referenced later in the survey via the Embed media Descriptive Text Field.

Conclusions

- **Implications:** Cost-effective methodology enhances REDCap's capability in multimedia research.
- **Future work:** Potential for broader application in various research settings.

Acknowledgements

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