

Video A11y: Enhancing the Sense of Agency for Blind and Visually Impaired People Watching Videos



Mina Huh CSCW Asia Winter School 2020

How do BVI people watch videos?



Background

What is an Audio Description?



Key visual elements



Narration

What is an Audio Description?



American Council of the Blind

@acbnational



People Are Turning Netflix Videos into "Audiobooks" with the Audio Description Feature [3playmedia.com/2017/12/06/peo...](https://3playmedia.com/2017/12/06/people-are-turning-netflix-videos-into-audiobooks-with-the-audio-description-feature/)

2:12 AM · May 4, 2018



See American Council of the Blind's other Tweets

Audio Descriptions

Dialogues



[PICTURE UP]

A young man unlocks an apartment door. Vincent and Jules step inside. A second young man eats at a table. ["HEY KIDS. HOW YOU BOYS DOIN'? HEY, KEEP CHILLIN'."] Jules motions for a young man on a couch to prop up his foot. He gives the "okay" sign, then turns to the man at the table.

00:24

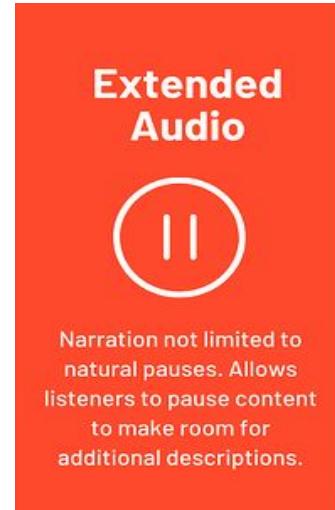
00:33

("...business partner, don't you?")



But what if there are too many visual elements
to address in time?

Extended Audio Description



Extended Audio Description



How do you feel? The biggest challenge arises from ...

*the lack of **the sense of agency***



: the experience of controlling both one's body and the external environment

Problem Statement

*Current practices of video watching by BVI people
are NOT supportive of **the sense of agency**.*

“

Challenges in current practices for BVI users

In current practice, three challenges greatly reduce the sense of agency, including:

- **Cross-Modal dissociation:** challenge of bridging visual and audio contents
- **Temporal dissociation:** challenge of navigating the video
- **Spatial dissociation:** challenge of exploring details of the visual content

Approach



How to bridge these dissociation challenges?

How can we improve the sense of agency?

Approach 1: Bridging visual and audio contents



Tradeoff between

Level of Details

AND

Smooth Flow

Approach 1: Bridging visual and audio contents

- **Inspect key visual elements** that should be explicitly delivered
 - Analyze how narrators decide on what to deliver and when to deliver
 - **Formative study** on what and how BVI users want to see(hear)



Adequate information provided



Essential description missing /
Unnecessary information provided

Approach 1: Bridging visual and audio contents

- Categorize the description into one of:



Setting introduction



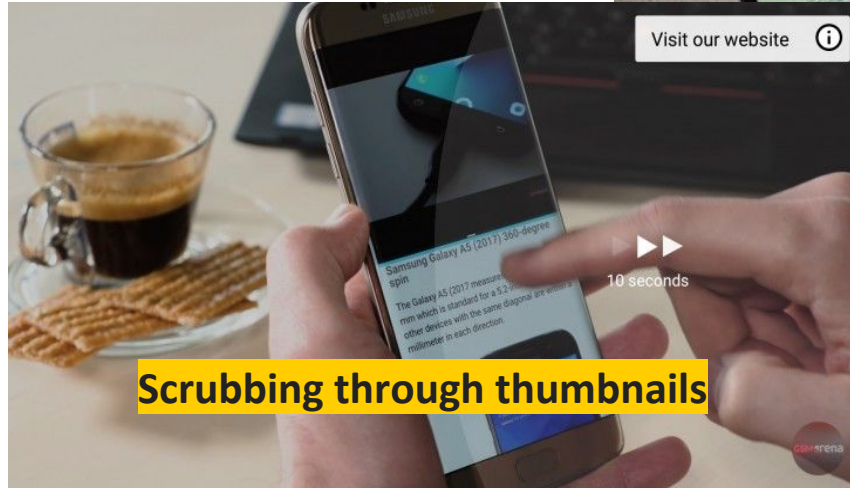
Element state transition



Cognitive description

- Inspect the **relationship between the audio description and the original soundtrack**
 - If the relationship implies the preceding or concurrent presence, follow.
 - Otherwise, place the description at breaks to minimize the interrupt [1]

Approach 2: Provide audified thumbnails

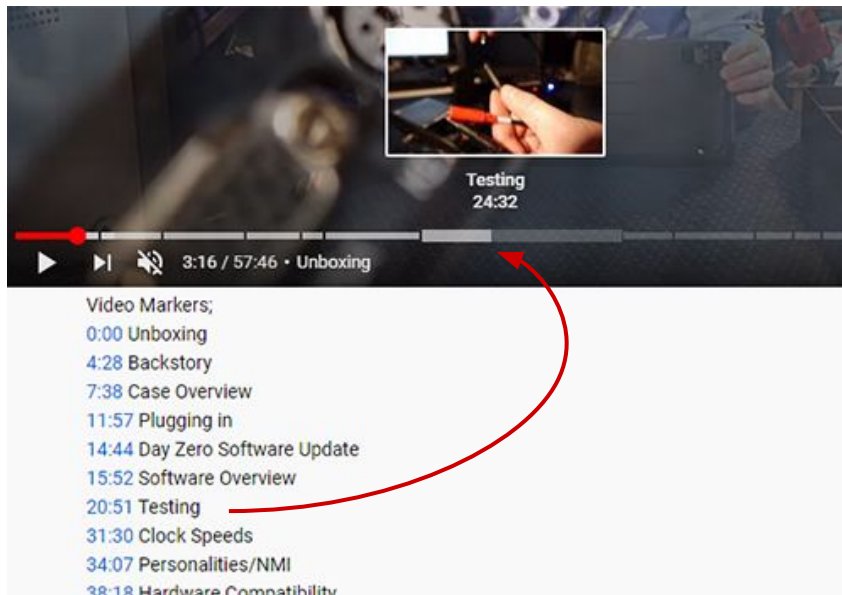
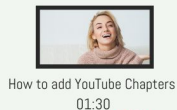


Approach 2: Provide audified thumbnails

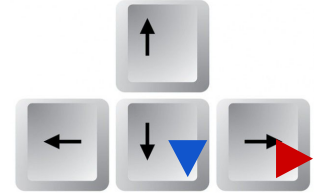
Video Progress Bar without Chapters:



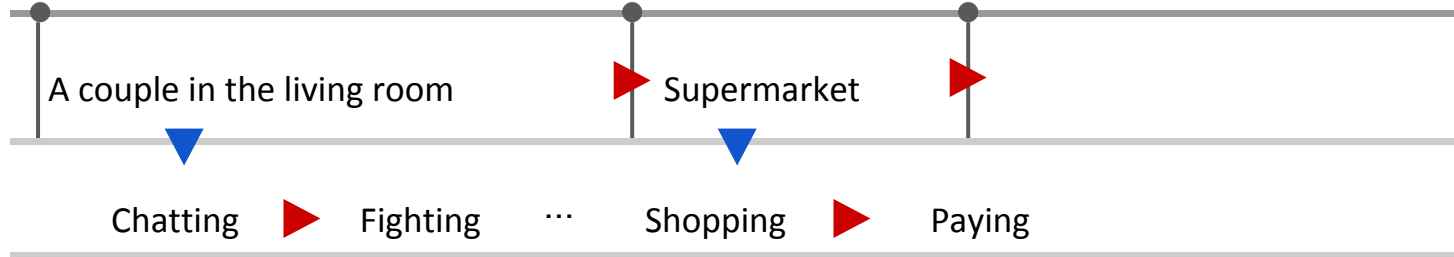
With Chapters:



Approach 2: Provide audified thumbnails



- Multi level units



- Mixed approach of Content + Time based navigation

- Skip 5 minutes → audio feedback of the resulting scene
- Skip to “Supermarket” → audio feedback on skipped time

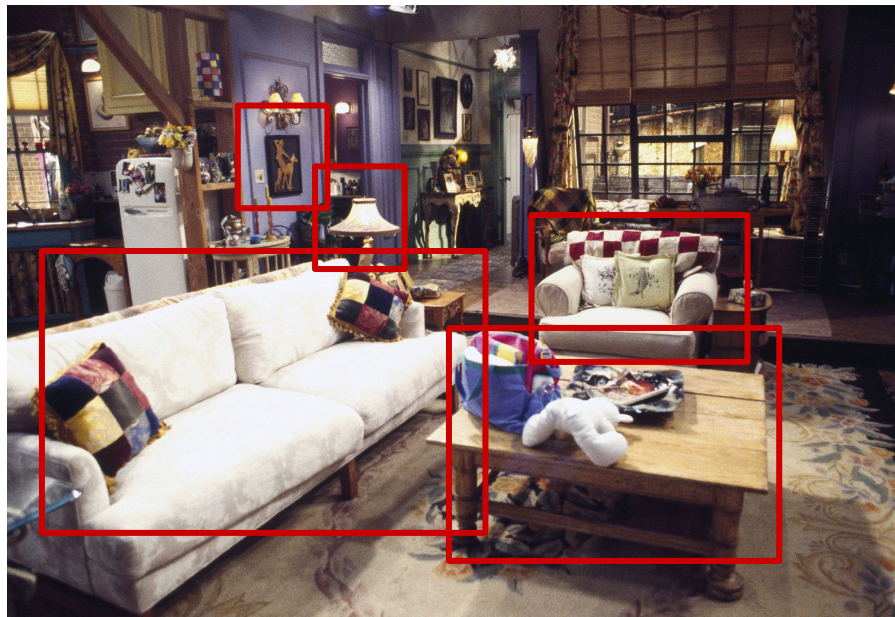
Approach 3: Exploring details within one frame

“Participants had preferences depending on his/her level of blindness, personal taste and experience” [1]

Provide On Demand, Full Control exploration of details

- Sound notification on key frames
- Users can pause and navigate the objects within the frame

Approach 3: Exploring details within one frame



Future Works

- Preliminary Interview with BVI user (N=3) ✓
- Design Prototype for each approach and run pilot studies
- System Iterations
- Field Study with the built plug-in

Summary

*We want to support the enhanced **sense of agency** for BVI people watching videos via **bridging the dissociations challenges**.*

Video A11y:

Enhancing the Sense of Agency
for Blind and Visually Impaired People Watching Videos



Mina Huh CSCW Asia Winter School 2020

Thank you for listening

Any feedback or questions are welcome!