

DynamicSlide: Reference-based Interaction Techniques for Slide-based Lecture Videos

Motivation

Lecture **slide** and **narration** are complementary

- Lecture slide: Information hierarchy & content
- Narration: Detailed explanation for each item



Slide items are associated with relevant part of narration

0:17 So each attribute, each object is defined by a set of attribute values.

0:25 And each attribute we can think of as being defined by the set of values that it can hold.

0:32 So we can have the same attribute mapped to different attribute values.

0:36 Height can be measured in meters or feet, temperature can be measured in Celsius, Kelvin, or Fahrenheit, lots of other sorts of things like that.

0:46 And different attributes will often be mapped to the same set of values.

0:51 ID numbers and age are both usually given as integer values.

How can we find and leverage the link between slide and narration (reference)?

Ongoing Work Editing support for slide-based videos

Motivation

- Unlike offline lecture, the content of lecture video is not frequently updated
- Instructor's editing need > Instructor's editing expertise
- Editing often involves substituting the original slide content

*How can we build a tool to help **instructors** directly update their video without having to patch and re-publish?*

- Updating text (a) and figures (b)
- Updating verbal explanations (c)
- Highlight a slide item (d) in sync with explanation (e)

Interaction techniques

Highlighting currently explained item

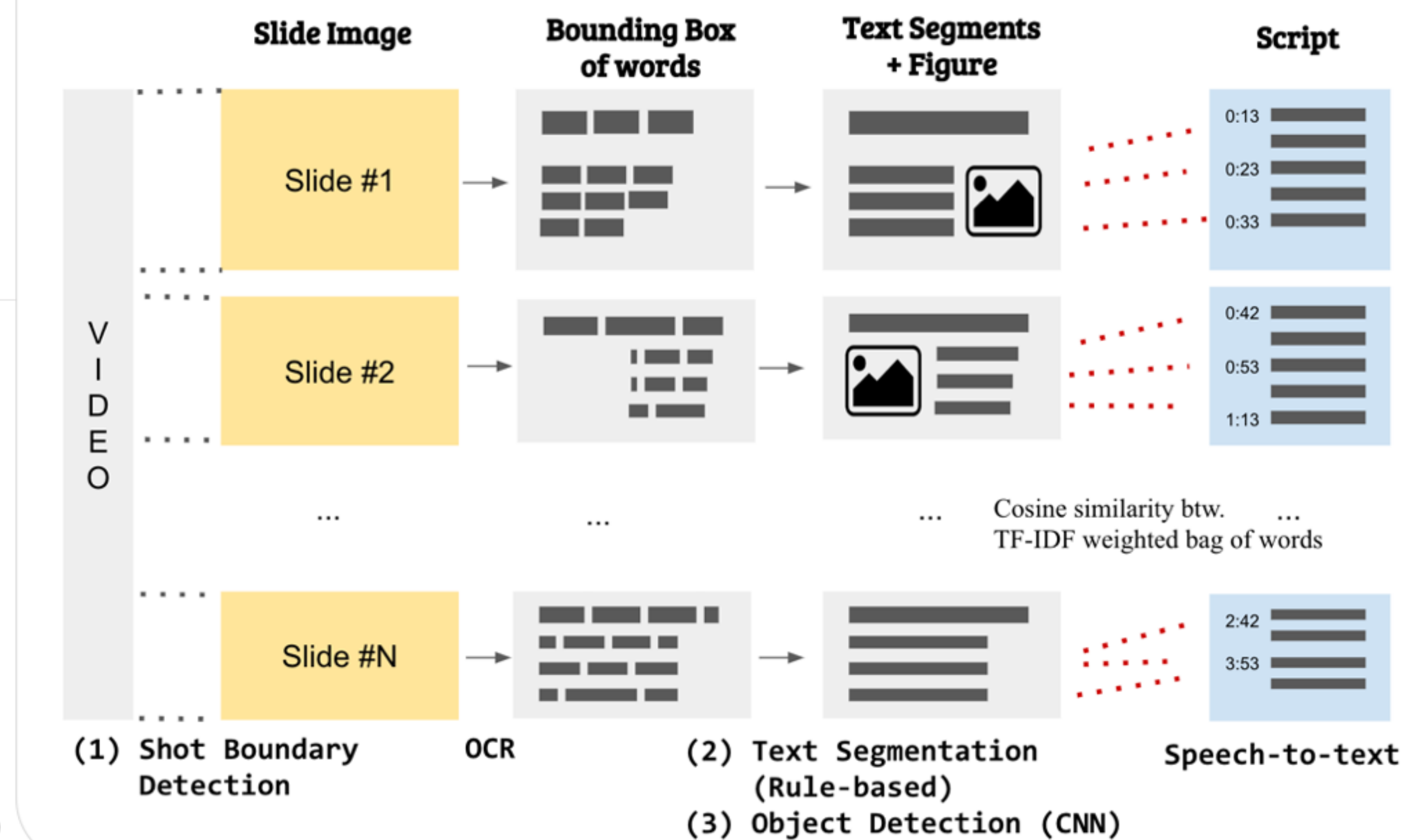
In-video highlighting and navigation

- Binary attributes are a special case of discrete attributes
1. Hover
2. Click

- Navigate to when the item is explained
- Highlight the current item

Highlighted items are collected and used for navigation

Pipeline for object-oriented video interaction



Example changes made by instructors