

Collective Intelligence within Web Video

Konstantinos Chorianopoulos (2013)

- Content-based video analysis
- User-based:
 1. tags, comments, micro-blogs
 2. **user interactions** with web video player (GoForward/GoBackward)

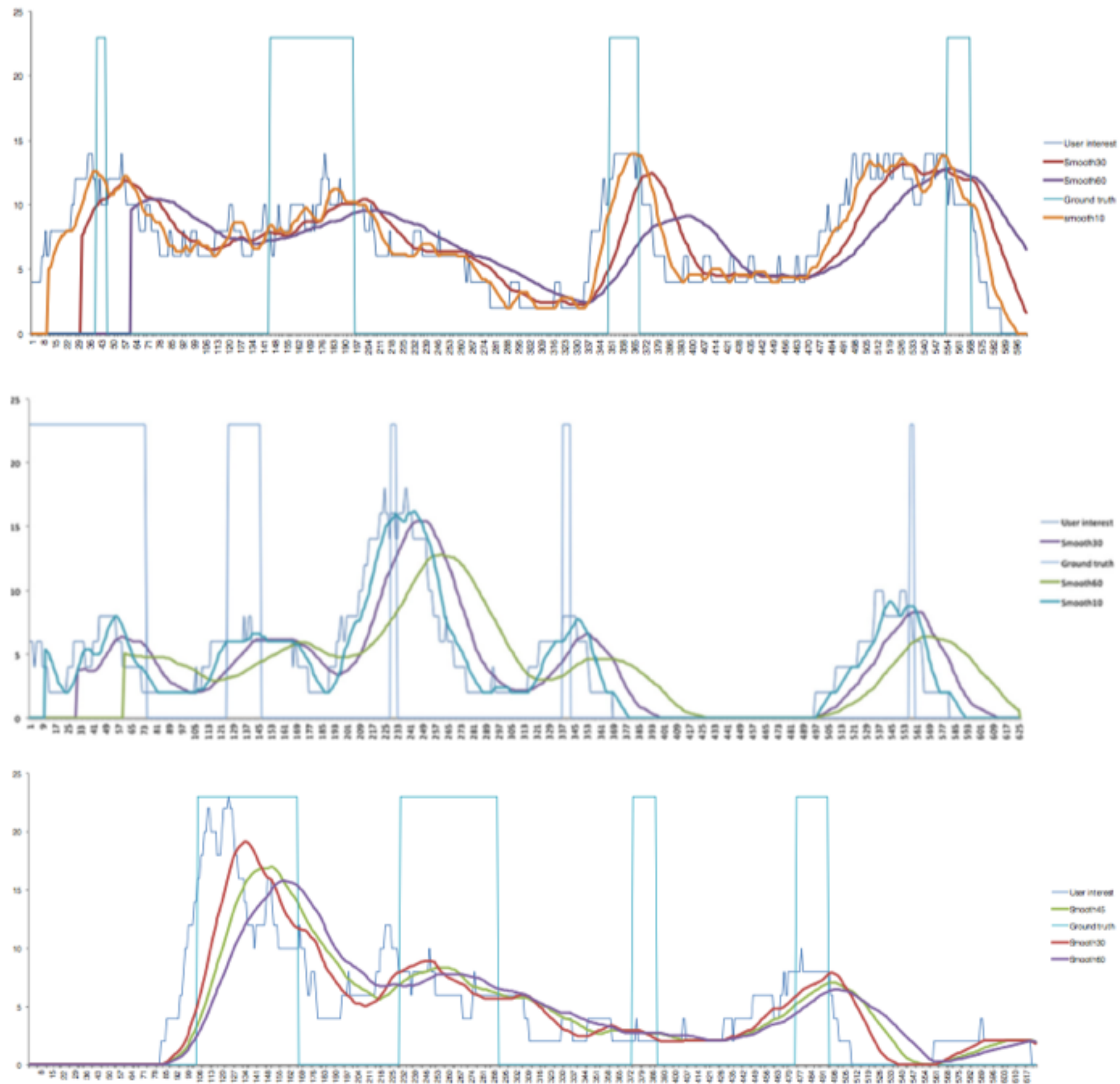


Figure 9 The original user interest time series (Replay30) is compared to alternative smoothed ones in order to select the most suitable moving window for further analysis. We observed that in all cases the smoothing window should be at least 30 seconds.

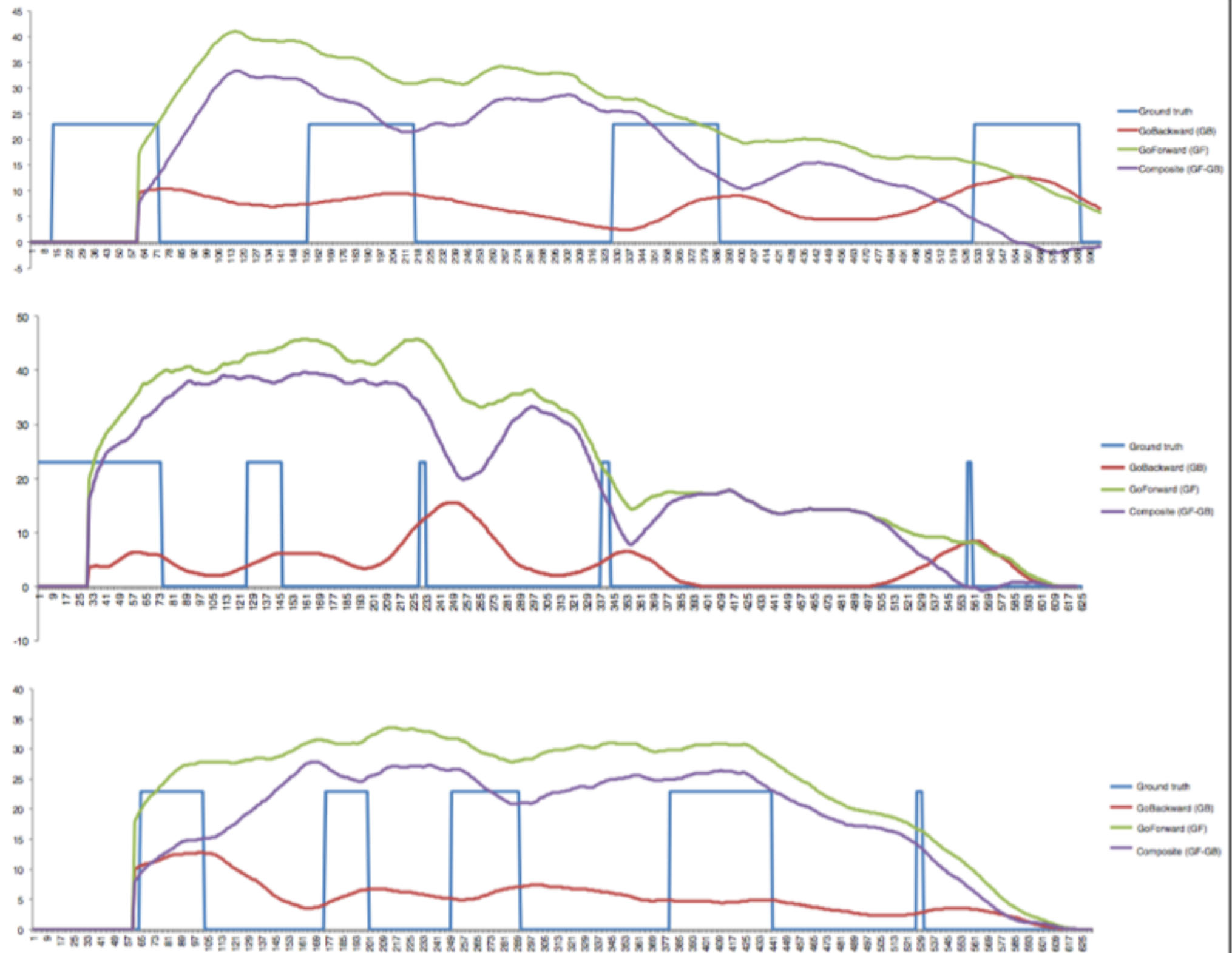


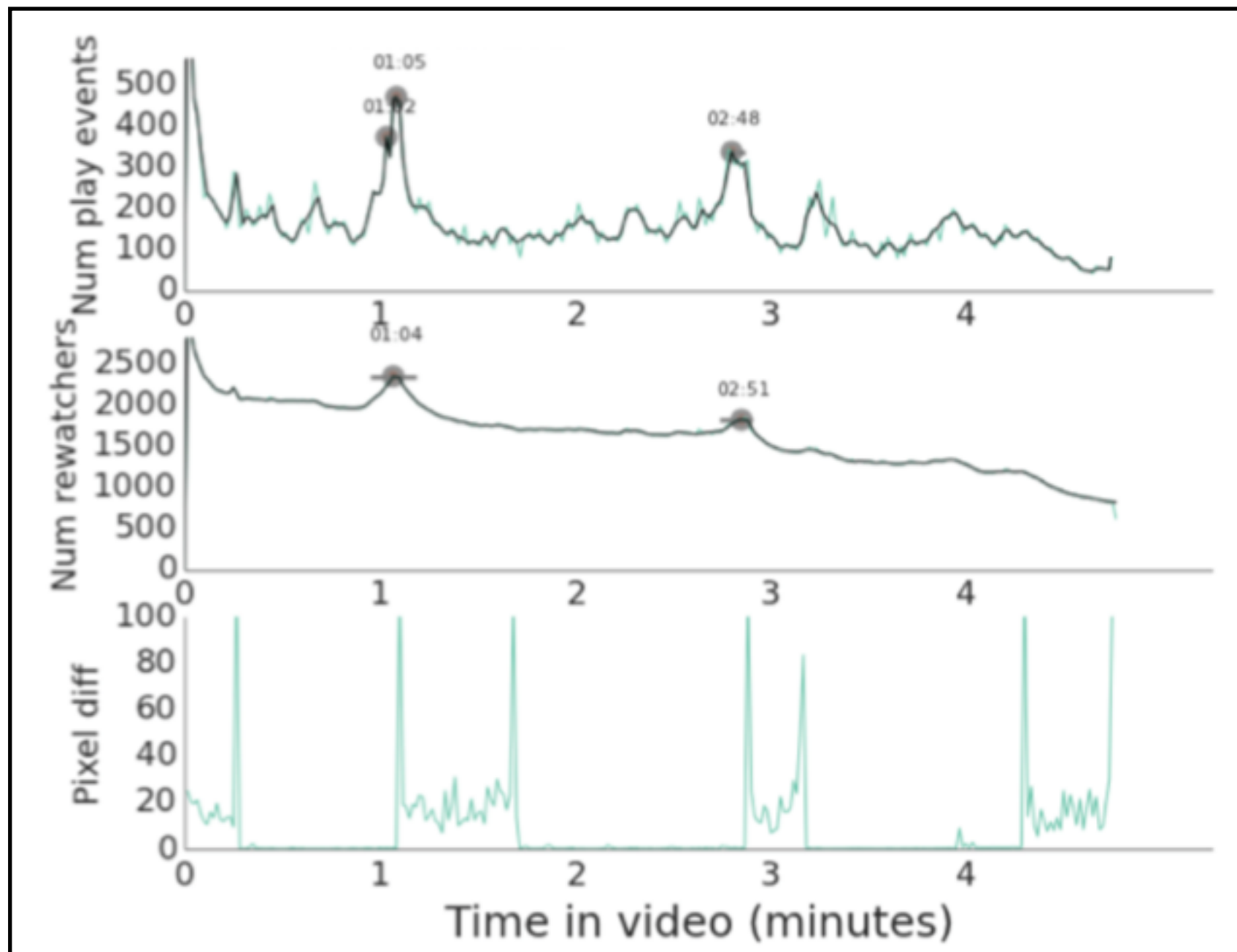
Figure 10 The comparison between the composite (Skip30-Replay30), the components Skip30, Replay30, and the reference time series reveals that the Replay30 time series is the most suitable for further analysis, because it closely matches the ground truth.

Data-Driven Interaction Techniques for Improving Navigation of Educational Videos

Juho Kim, Philip J. Guo, Carrie J. Cai, Shang-Wen (Daniel) Li,
Krzysztof Z. Gajos, Robert C. Miller (2014)

- Watching pattern:
 1. linear manner: TV shows
 2. replay, skip: educational video
 - important concept needs to be revised
 - details and examples can be skipped

- Log pause, jump, replay
- learner often re-watch and find specific info.
- Interaction peaks: interest, confusion, importance, etc.



- Improve navigation using interaction data
 1. hard to identify and navigate to important parts
 2. remember and describe info. in different ways
 3. summary are important when prepare for exam

Recursion on Strings

search for keywords inside the video



Keyword Search

Word Cloud

Lecture Video

Interaction Peaks

Rollercoaster Timeline

Personal Watching Trace

Personal Bookmarks

palindrome characters palindrome
left onward string ispalindrome

How to solve this recursively?

- First, convert the string to just characters, by stripping out punctuation, and converting upper case to lower case
- Then
 - Base case: a string of length 0 or 1 is a palindrome

edX

[4:06-4:25] You watched this segment.

1:44 / 7:29 Add Bookmark

So how do we solve it?
We first convert the string to just characters.
We'll look to that in a second.
And solving it recursively is actually pretty easy.
If I have a string that's either of length zero or of length one, it's a palindrome.
So length one is just one character.
Otherwise, to solve this, what I'm going to do is take the string and ask the following question.
If the first and last character are the same, then they satisfy the condition.
And let me then simply look at the remaining string, throwing away the first and last character, and ask is that a palindrome.
Wonderful.
There's that recursive property again.
If I can break it down into that problem, I'm set.
So I could write code to do that.
Just to give you the example again, this says I'm going to take something like "Able was I were I saw Elba" and reduce it to just that string of characters without the spaces or any punctuation.
And then, to test whether that string is a palindrome, that's the same as asking are the first and last characters the same?

Interactive Transcript

my bookmarks frequently rewatched by others

Other learners rewatched this part.	Other learners rewatched this part.	Other learners rewatched this part.	Other learners rewatched this part.
<p>Recursion on non-numerics</p> <ul style="list-style-type: none">• How could we check whether a string of characters is a palindrome, i.e., reads the same forwards and backwards?– "Able was I were I saw Elba" – attributed to Napoleon– "We are not as dead as we first, drawn toward to new one?" <p>edX</p>	<p>How to solve this recursively?</p> <ul style="list-style-type: none">• First, convert the string to just characters, by stripping out punctuation, and converting upper case to lower case• Then<ul style="list-style-type: none">– Base case: a string of length 0 or 1 is a palindrome– Recursive case:<ul style="list-style-type: none">• If the character matches last character, then is a palindrome if middle section is a palindrome <p>edX</p>	<p>edX</p>	<p>edX</p>

Highlight Storyboard

Evaluation

- Visual Search

find specific piece (20s) of visual content

- Problem Search

find the part that discussed the answer and state the answer

- Summarisation

write down the main points

Issues

- Jumping between integration peaks may distract the learner
- Peak signals will be reinforced while some other potential important ones will be ignored

Learnersourcing Subgoal Labels for How-to Videos

Sarah Weir, Juho Kim, Krzysztof Z. Gajos, Robert C. Miller (2015)

What is Subgoal

- Subgoals are at higher conceptual level
- Reduce cognitive load by abstracting away low-level details
- Encourage to self-explain why a set of steps been grouped

Overall goal	How to Make a Cake
Subgoal	Combine the dry ingredients
Individual steps	<ol style="list-style-type: none">1. Put 2 cups of water into a mixing bowl2. Add 1 cup of sugar to the bowl3. Add 2 tbsp of baking soda4. Add 1/2 tsp of salt5. Stir together
Subgoal	Separately combine wet ingredients
Individual steps	<ol style="list-style-type: none">6. In another bowl, beat two eggs7. Add 1 stick of butter and beat8. Add 1 cup of milk and stir

Learnersource vs Crowdsource

- Learner are unlikely to engage with tasks that are tedious or irrelevant to their learning
- Incentivised by the desire to learn, not money
- Collectively generate useful content; probably improve the learning experience

Initial / 3-stage workflow

crowdyAboutHelp

CSS (cascading style sheets) for beginners #1 - Introduction to styling with CSS

By: BeginnerTutsdotcom

Wiki Video Outline

Print

1. Use CSS to style HTML pages
2. Use inline styling to style HTML elements individually
3. Use stylesheets to remotely control styles of all HTML pages
4. Add the 'style' attribute within the <p> tag
5. Inside the style attribute, specify which aspects you want to style
6. Type 'color' inside the style attribute to set the color of the paragraph
7. Assign the hexadecimal value #FFFF00 to make the paragraph yellow
8. View the file in the browser to see the yellow paragraph
9. Type a semicolon after the property value to separate the properties
10. Type 'background-color' in the style attribute to set the background color of the paragraph
11. Type #CCC to set the background color to gray
12. View in browser to see the paragraph with a gray background
13. Create a css stylesheet with the .css extension
14. Type 'p' followed by '{ }' to style the paragraph
15. Type 'color: #FFF;' to set the color to white
16. Type 'background-color: #CCC;' to set the background color to gray
17. In the HTML file, use the <link> tag to reference the external stylesheet
18. Set the href attribute to the css filename
19. Set the type to "text/css"

CSS (cascading style sheets) for beginners #1 - Introduction to styling with CSS

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Stylesheet.css

css

Using Style Sheets

SCSS

Stylesheet.css

T1.html

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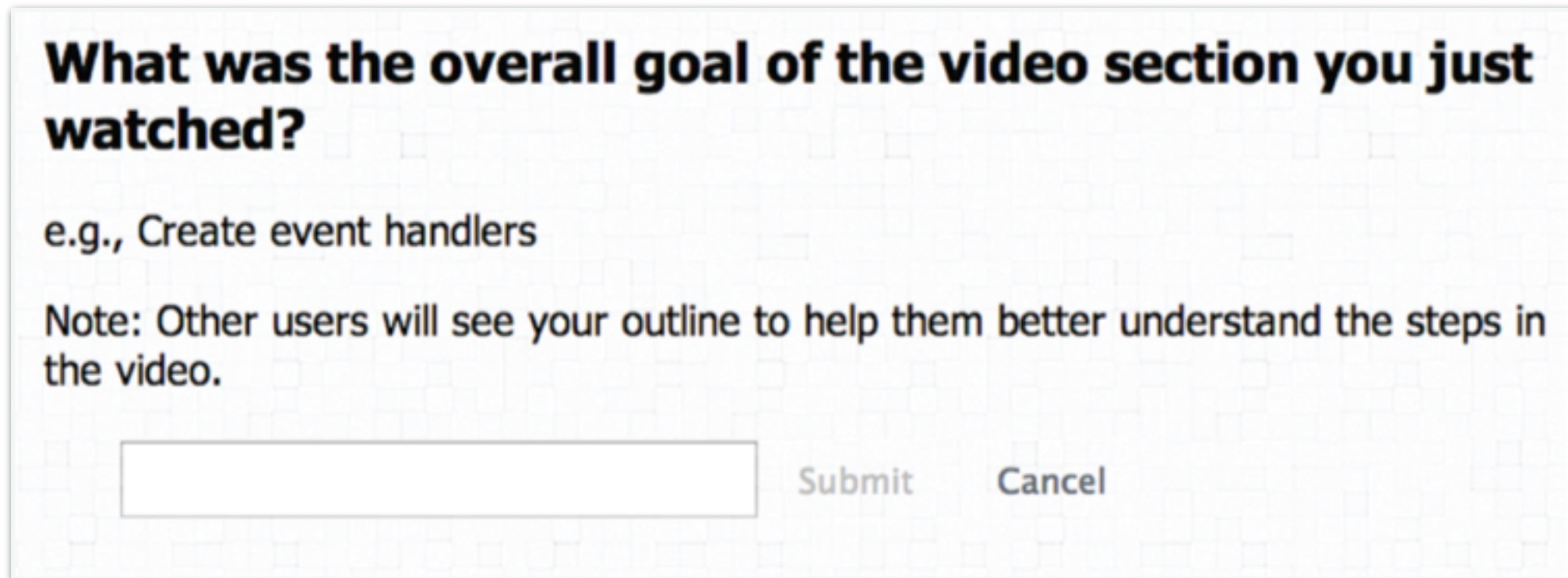
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Generation / 3-stage workflow



What was the overall goal of the video section you just watched?

e.g., Create event handlers

Note: Other users will see your outline to help them better understand the steps in the video.

Submit Cancel

Figure 4. In Stage 1, learners are asked to generate a new subgoal label after watching a video segment.

- Every certain interval (can be improved), the question is prompted
- Stage terminates when 3 subgoals are generated

Evaluation / 3-stage workflow

Which of the following best describes the video section you just watched?

Choose the best answer (submitted by other users) or add your own.

- ☐ importance of css, comparison to html
- ☐ defining css
- ☐ learn css
- ☐ **I have a better answer:**

Submit Cancel

Figure 5. In Stage 2, learners vote on a subgoal they find most accurate.

- Stage terminates when the number of upvotes or the difference in upvotes between the top two subgoals reaches a certain threshold

Refinement / 3-stage workflow

Does the below statement (submitted by other users) accurately summarize the steps?

Tip: Good statements usually begin with a verb.

Statement:

basic steps to creating an HTML template

Steps:

1. Begin HTML page with <html> tag and end with </html>
2. Start the <body> tag above content, end </body> below content
3. Create head section using <head> tag
4. Use the <title> tag to create page title

- ☐ Yes, this statement applies
- ☐ No, these steps don't require summarization
- ☐ **No, and I want to revise the statement:**

basic steps to creating an HTML

Submit

Cancel

Expert Subgoal	Evaluation	Learner Subgoal
<i>Learn HTML- Basic Structure and How to Link Pages</i>		
Create top-level structure of an HTML file	Expert better	The video stopped right as it was starting to talk about the head section
View HTML page in a Web browser	Expert better	Save and open a HTML document in the browser
Add a hyperlink	Learner better	Create link to another page
Create target page of the hyperlink	Match	Create another page to link to and from
View and navigate between both pages	Expert better	Create HTML pages and links
<i>Introduction to styling with CSS</i>		
Understand what CSS is	No majority	Introducing CSS, comparison to HTML
Two kinds of CSS styling	Match	Inline styling, and difference between this and stylesheets
Set text color of a paragraph	Match	Using the style and color attributes of inline styling
Set background color of a paragraph	Expert better	Problems with inline styling, solutions
Create an external stylesheet	Match	Create a stylesheet to set paragraph colors
Linking stylesheet to HTML file	Match	Linking CSS documents to HTML
<i>Making Divs Side by Side using CSS</i>		
Create divs in HTML file	Match	What HTML code is used to create side-by-side <div>
Create CSS for wrapper and left div	Match	Define div appearance with style blocks
Create CSS for right div	Expert better	Style the left and right div, color, height, width
Position divs side by side	Match	Put the two divs side by side and adjust spacing between them
<i>Introduction to Selectors</i>		
Create HTML and JavaScript files	Learner better	Selector introduction
See example of a jQuery ID selector	No majority	Using selectors and jQuery to create event handlers for page objects

Too specific

Too board