



# Visual dynamics in digital catalogues: a comprehensive analysis of cinemagraph integration through eye-tracking technology

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## Introduction

The theoretical framework for this study is based on the concept of visual communication and its role in influencing user behavior. Visual communication is a powerful tool in digital marketing, as it enables brands to convey messages, evoke emotions, and establish connections with audiences through the use of imagery, color, motion, and design elements (Lotman, 2016; O'Connor, 2024). In this context, cinemagraphs serve as an innovative form of visual storytelling that combines the best aspects of still photography and video. Unlike animated GIFs, which are often repetitive and low in quality, cinemagraphs employ high-quality visual elements that create a more immersive experience, blurring the line between static and dynamic content (Ramona, 2019; Winter, 2016). The concept of cinemagraphs was first introduced by New York-based photographer Jamie Beck and web designer Kevin Burg in 2011. They created cinemagraphs for New York Fashion Week and posted them on the Tumblr blog "From Me to You," where they received considerable attention (Susanto, 2019). Cinemagraphs are characterized by a subtle movement in one part of the image, while the rest remains static, effectively drawing the viewer's focus and creating a "living photo" effect that sets them apart from both static photography and video content (Ramona, 2019; Flock, 2011). Cinemagraphs are characterized by four main features: an infinite loop, continuity, animated frames, and a hypnotic effect. The infinite loop creates an impression of endless repetition, which is a shared component with forms such as animated GIFs, Vine, Boomerang, and Facebook Live Photo. The second component is pronounced continuity, which distinguishes cinemagraphs from other forms. This creates an illusion of time, making the beginning and end of the video imperceptible. In other formats, the repetition of a series of static frames is evident, whereas in cinemagraphs, individual elements are animated, creating dynamic parts in contrast to the rest that remains static. The visual effect created by the previous three components evokes a sense of hypnosis and emotion in viewers (Fang, 2024). An overview of the components is shown in Figure 1.

# Methods

Following the same principle, three cinemagraph examples were created in Adobe Photoshop (Figure 2). The videos used were sourced from the internet in the best possible resolution, and the cinemagraphs were saved in MP4 format. After creating the cinemagraphs, the next step is designing and creating the digital catalogue (Figure 3). The first version is a catalogue with all static elements, while the second version is an interactive catalogue featuring three dynamic elements, namely three cinemagraphs. For the purposes of the research, a visual test was conducted. The experiment involved 30 participants, 20 women and 10 men, with an average age of 22.6 years. For conducting the experiment, a monitor was used to present both versions of the catalogue to the participants. Additionally, the Gazepoint GP3 eye-tracking device was used along with the software tools Gazepoint Control and Gazepoint Analysis. The Gazepoint GP3 is a research eyetracking device that uses a 60 Hz machine vision camera at the core of its image capture and processing system. The device was calibrated before each participant. For the analysis of the obtained data, the following research questions were formulated:

Figure 6 graphically shows the number of participants who noticed each element during the first fixation on the dynamic stimulus. Based on the analysis of how long it took participants to notice images on the static stimulus and cinemagraphs on the dynamic stimulus, which were identically positioned, the following observations can be made. All participants noticed the cinemagraph in the upper left corner, while one participant did not notice the image in the upper left corner. One participant did not notice the cinemagraph in the center, while five participants did not notice the image in the center. All participants noticed the cinemagraph in the upper right corner, whereas five participants did not notice the image in the upper right corner.



- Which element (Area of Interestes AOI) did the participants notice first, and at which second?
- Does the cinemagraph attract participants' attention faster compared to a static image?
- Do participants spend more time on the cinemagraph compared to a static image?
- Do participants return to the cinemagraph?

To analyze the data, it is necessary to create AOIs in the Gazepoint Analysis software. Defining these areas facilitates and shortens the time required for data analysis. Twelve areas were defined: image/cinemagraph in the upper left corner (S1), image/cinemagraph in the center (S2), image/cinemagraph in the upper right corner (S3), product prices (Price 1/2/3), device, as well as product names and descriptions. Figure 4 shows the AOIs on a sample.

## Results





**Figure 2** Heatmap of single participant and all participants on the static stimulus



**Figure 3** Heatmap of single participant and all participants on the dynamic stimulus

### **Discussion / Conclusion**



astonishes, and ultimately leaves a lasting impression on users. A significant advantage of cinemagraphs is their versatility across various fields, as the subject matter can be anything. In today's competitive market, the abundance of advertisements in various forms often leads to people forgetting what they have seen. Therefore, it is essential to capture attention and ensure that users remember their experiences. This can be achieved by incorporating interactive elements into catalogs.

#### REFERENCES

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Infinite Looping	Intensified Continuity	<b>Animated Frames</b>	Hypnotic Absurdity
The cinemagraph repeats a captured collection of moments ad infinitum.	The continuity in the gestures within the cinemagraph loop creates an illusion of linear time, with an unclear beginning or end.	Individual still frames are animated with motion into a compressed, easily disseminable file format.	The repetition of gestures triggers hypnosis and elicits subjective emotional responses from viewers.

#### **Figure 1** *Four main features of cinemagraph*

Due to their visually captivating properties, cinemagraphs are widely used in various fields, including fashion, travel, advertising, and online marketing (King, 2024). Their ability to attract and retain viewers' attention makes them a powerful tool for enhancing visual communication in digital catalogues, where engagement is crucial.

machine name." The average time to first fixation was 0.095 seconds, while the average duration of the first fixation was 0.99 seconds. The shortest first fixation duration was 0.02 seconds, and the longest was 2.27 seconds. Figure 2 graphically shows the number of participants who noticed each element during the first fixation on the static stimulus. Based on the analysis of the results for the elements (AOI) that participants first noticed on the dynamic stimulus, eight elements were identified as being initially observed, with eight participants first noticing the element (AOI) "Coffee machine name" and one less (seven) noticing the cinemagraph in the upper left corner (S3). The average time to first fixation was 0.095 seconds, while the average duration of the first fixation was 1.25 seconds. The shortest first fixation duration was 0.16 seconds, and the longest was 3.47 seconds.

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