How Example-Based Authoring of Motion Graphics Impacts Creative Expression: Differences in Perceptions of Professional and Casual Motion Designers.

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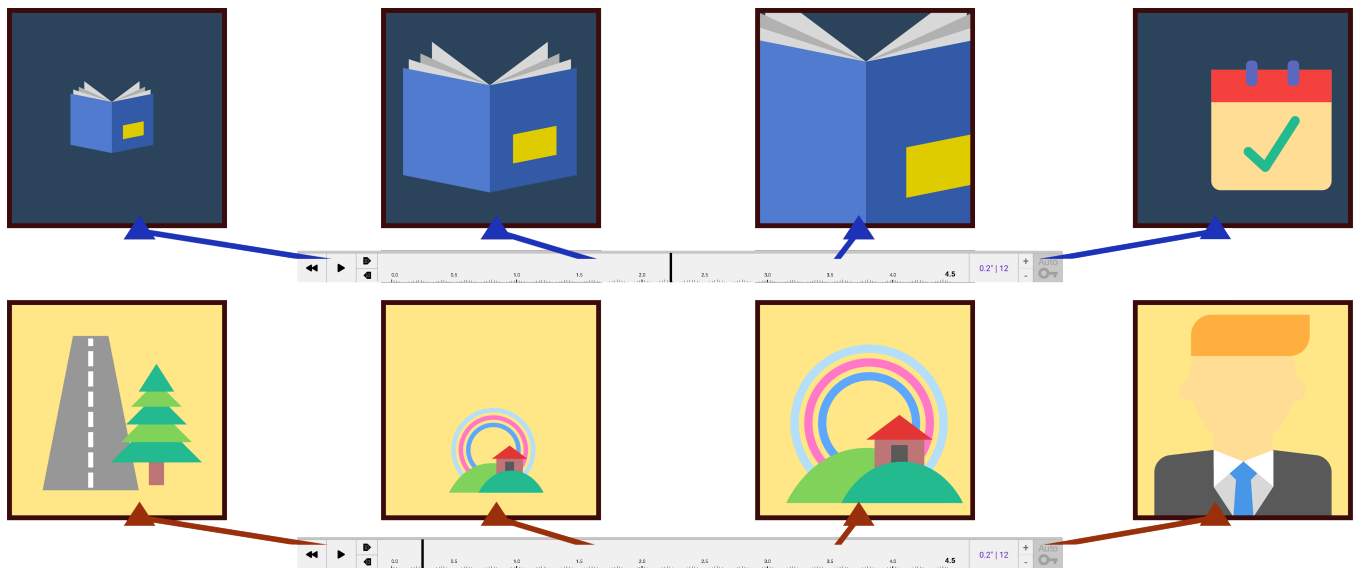Burnaby, BC, Canada
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Figure 1: Example frames from the animation made by casual motion designers in this study (top frames are from P4, a scientist; bottom frames are from P11, a real estate agent). This was the first time these participants could express their creativity in video authoring on their own, and found it to be a rewarding experience to capture their intent independently.

ABSTRACT

Motion graphics authoring is a time-intensive endeavor, demanding proficiency in various feature-rich software. Automated, example-based solutions are now being explored to simplify the motion graphics creation process. To investigate how such streamlined authoring tools impact motion designers' workflows and perceptions of creativity, we deployed an end-to-end motion graphics authoring tool to 14 users, spanning casual to professional design expertise. Our key findings reveal a dichotomy: casual designers embraced the tool's automation, finding empowerment in its simplicity, even at the expense of losing narrative control. Conversely, professionals expressed reservations and raised concerns about the trade-offs between efficiency and creative autonomy. Notably, the level of automation in animation emerged as a point of contention, underscoring differing expectations between the two groups. Our work contributes insights into such nuances, offering implications for designing the next generation of motion graphics authoring tools that cater to a broad spectrum of creative aspirations and abilities.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in HCI**; *Field studies.*

KEYWORDS

interactive systems and tools, motion graphics videos, computer graphics, user experience design

1 INTRODUCTION

Informational videos using motion graphics are gaining popularity in domains such as education [17, 18, 73], data visualization [6], healthcare [32, 55] and finance [67]. These videos provide a medium to explore ideas creatively that are otherwise difficult to present. However, authoring such videos remains an expert-driven process [1, 15, 64], often necessitating skills and knowledge in content creation, animation, and sequence editing [20, 26, 71]. As a result of such difficulties, the user's creative exploration often takes a backseat to technical mastery and overcoming the challenges of learning and creating with the software tools. Advanced motion design applications such as Adobe After Effects [3], Autodesk Maya [40], or Maxon Cinema4D [14] offer the capabilities needed to produce high-caliber motion graphics videos. However, these applications introduce a steep learning with feature-rich interfaces. This is especially cumbersome for casual motion designers [47] who have not received prior training in motion design and are exploring motion graphics for domain-specific needs. For such users, producing any creative content is limited to general slide-creation tools such as Microsoft PowerPoint [51] or Google Slides [61] that are simpler to use but require extensive modification to create a video [25]. These modifications, in fact, stem from the technical knowledge of motion graphics authoring, such as skills to break down long scripts into multiple shots, create transitions between different shots, and compile the content into a cohesive video.

To enable more individuals to express their creativity using such tools, many simplified applications are being explored (e.g., Rive [53], Lumen [37], or Animaker [7]) that offer fewer features but streamline the overall video creation process. These tools strive to provide minimal interfaces in which limited features are easier to find and use. Moreover, being on cloud servers, such tools often eliminate the need for software installation and maintenance or file storage. Recently, AI-powered tools have also been emerging to further advance content creation using techniques such as automated green screen removal [54], image quality enhancement [33], text-to-avatar conversion [66], or direct text to video creation [35]. As the industry of motion design tools continues to innovate and grow, the availability of advanced tools and automation will offer an abundance of new authoring opportunities for creators.

Despite the promising innovations in motion design, previous research highlights the unique challenges of authoring motion graphics, such as starting with a blank canvas, which are not as prevalent in fields like video production or photography [2, 27]. We argue that the technical capabilities of new motion design tools alone will not necessarily translate to more effective creative workflows, and it is important for researchers and industry practitioners to step back and understand the role of individual creative decision-making, how design tools fit within different users' expectations and workflows, and how users learn and use such tools for creative expression purposes on their own. This is particularly important as recent studies (e.g., [4, 6, 8, 26]) show that the end-users of these tools include both casual and professional motion designers who vary in their technical expertise, backgrounds, learning approaches

and creative demand. Addressing this gap in our understanding of the diverse needs and domain-specific constraints of different motion designers is not just a scholarly exercise but necessary to inform the design of more effective and user-centered motion design tools.

To our knowledge, our study is the first to explore the phenomenon of motion graphics video authoring using an end-to-end tool within the context of professional and novice motion designers. We recruited 14 participants and provided them access to *Katika* [25], a motion design tool that supports end-to-end authoring, including scriptwriting, artworks, motion presets, and sequence editing. Our participants used this tool for a one-week period and experimented with different example-based animation tasks at their own pace. Using questionnaires and follow-up interviews, we aimed to understand how users perceived the authoring process, how it impacted their creative expression, and the extent to which such tools could be integrated into different workflows. Additionally, we tried to understand users' perspectives on the future of motion design tools employing automated and novel interaction techniques, particularly how they envision balancing individual creativity with software-generated content.

Our key results indicate that both groups perceived example-based authoring as being useful but for different reasons. The casual motion designers were able to explore their creativity in video authoring independently for the first time and found the end-to-end nature of the tool empowering for their design process (Fig. 1 shows animation frames created by a casual motion designer). On the other hand, while the professionals found value in creating "quick-and-dirty" prototypes at the earlier stages— before moving to more complex software— they were wary of the impact of the notion of control and advised caution against losing control over the creative narrative. In particular, the level of automation in animation emerged as a point of contention, underscoring differing expectations between the two groups.

These results are somewhat consistent with findings from other creative domains [23, 24, 57, 59] where experienced practitioners appreciate incremental improvements and prefer more control over their creativity. However, we also found that advances in AI-based domains, such as prompt-based interactions recently made popular by ChatGPT [48]), have potentially set unrealistic expectations. For instance, casual users expected even more automated tools for motion design. For such participants, the goal of creative exploration was seen as merely "prompting the software" to create content. As such, this population felt that removing technical barriers intrinsically translated to higher creativity. However, since this population had no previous experience in creating motion graphics videos on their own, they could not reasonably compare the automated approach with the traditional methods that allow for more fine-tuning and advanced productions.

By illustrating motion designers' experiences in real-life contexts and examining the perception of future use, we discuss several design guidelines for facilitating the creation of more useful and usable motion design tools that cater to diverse needs and support users in expressing their creative ideas without taking control away from them. In doing that, our paper makes the following contributions:

- Insights into how end-to-end motion graphics authoring tool fit the nuanced workflows of 14 casual and professional motion designers and how each group used and reacted to the tool in their own contexts;
- A synthesis of users' workflows, challenges, and the perceptions of creative control shaped for emerging solutions and interaction transformed into design implications;
- An analysis of various features and the variation in usage that can help future developers of similar applications assess the need for different features to support creative aspects of motion design;

2 RELATED WORK

To contextualize our findings, we draw upon literature on the state-of-the-art tools of motion graphics authoring, challenges of authoring motion graphics videos faced by different users, and broader issues of software learnability in creative software domains.

2.1 State-of-the-art Motion Graphics Video Authoring

Motion graphics video authoring has seen significant advancements in recent years, with various state-of-the-art tools and technologies shaping the industry. Notable motion graphics software such as Adobe After Effects [3], Autodesk Maya [40], or Maxon Cinema4D [14] offer countless capabilities, catering to various user preferences and requirements. Their comprehensive features include 2D and 3D animation, visual effects, text animation, and integration with other software tools. The versatility of these tools allows users to create complex and visually stunning motion graphics for various purposes. In recent years, we have also witnessed emerging tools with low entry barriers targeted at casual motion designers. Web-based motion graphics applications, such as Rive [53], Jitter [28], and Animaker [7], target non-professionals and educators offering drag-and-drop interfaces and template-based workflows. Many of these tools provide a range of features and capabilities, with the added benefit of being platform-independent and requiring no installation. Recently, there have also been advances in computer graphics authoring using artificial intelligence (AI) and machine learning technologies [44, 62].

While numerous motion graphics tools are available, these tools may not adequately cater to the diverse requirements of audiences with different skill levels [26]. Since many motion graphics tools are primarily designed for professional use [64], they tend to be less intuitive for casual motion designers who get lost in the feature-rich interfaces [26, 31, 42]. Our study sheds light on the specific requirements of diverse users (professional and casual motion designers) for tackling real-life motion graphics projects.

2.2 Challenges in Creating Motion Graphics Videos

Creating motion graphics videos involves pre-production, production, and post-production stages [9]. However, current mainstream video production tools often lack pre-production features [26], and designers have to use separate applications for different creation tasks, increasing the learning complexity and task switching cost [27, 64]. Creating motion graphics videos further introduces other challenges, such as breaking a long script into separate shots, finding and editing the necessary graphical assets, using keyframing and interpolation techniques to animate assets, editing a sequence of shots into a cohesive video, and finally adding audio and converting the projects into appropriate video formats [26]. Although the current industry standard suite of motion graphics tools (e.g., Adobe After Effects [3], Autodesk Maya [40], and Maxon Cinema4D [14]) provides features for creating high-caliber videos, creating even a short video in this environment can take several hours or even days to complete [50]. Moreover, for professional motion designers, it can be difficult to quickly create and communicate their early-stage prototypes with their team members, clients, and other stakeholders [26, 64], and it takes away valuable time that could be spent on crafting the overall story. But, to what extent these professional users find it useful to make use of the minimalist motion graphics authoring tools is not known and is a key aspect of what our study probes into.

There is also an entirely different class of casual motion designers emerging who desire to make animated videos independently but face different challenges. For example, casual designers face steep learning curves associated with advanced tool interfaces and the integration between different software [25, 26]. They also face difficulties with finding the required content and assets for their projects, understanding the role of each step in the authoring process, and the sheer number of tools usually required to create a video. Minimalist end-to-end authoring tools that try to address these challenges are promising for casual designers, but we know little about how these users incorporate such tools in their own contexts and workflows and how they perceive them for their content creation needs.

2.3 Supporting User Creativity via Examples and Automation

Supporting user creativity in the domain of motion graphics is crucial for enhancing the user experience of authoring tools. These tools must balance simplicity for novices and advanced functionality for professionals, avoiding overwhelming users with complex features [58, 64]. The inherent complexity of motion graphics tools often challenges casual designers, necessitating a design approach that promotes creative exploration and learning [42]. The adoption of user-centered design principles, complemented by tutorials, is essential to improve tool learnability and inclusivity [26, 64], fostering environments that support creative thinking and learning [58].

Example-based learning has become a pivotal method in this context, where users learn from and get inspired by existing examples. This approach has applications across various fields such as programming [11], 3D modeling [43], and image editing [21]. In motion graphics, providing a library of motion presets or artworks can simplify animation tasks and enhance creative expression [25]. This aligns with the creativity support framework, which emphasizes the importance of rich sources of inspiration to stimulate creativity [22].

Recent literature extends these ideas into highlighting how AI tools can be used in the creative process [36, 49]. For instance, AI-driven platforms have been shown to facilitate business creativity
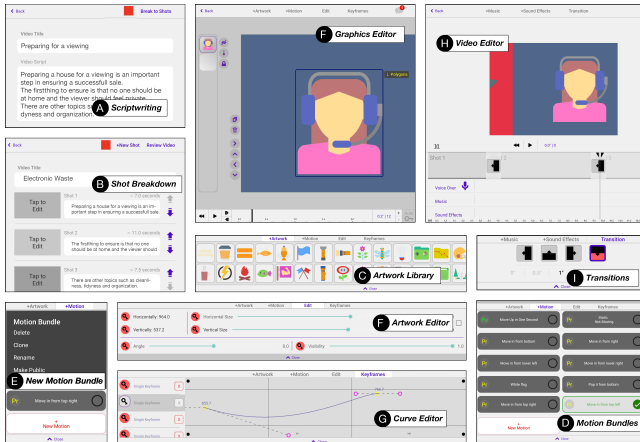
Figure 2: For this study, we utilized Katika [31], an end-to-end example-based research motion graphics video authoring prototype. This figure shows Katika's key features, which include a) scriptwriting, b) shot breakdown, c) library of editable artworks, d) motion presets, e) example animations (motion presets), f) animation curve editor, g) timeline for editing the animations, h) video editor and i) transitions. Its versatility and flexibility made this prototype an ideal candidate for the creativity exploration study.

[49] and enhance journalistic practices through creative intelligence tools [39]. Furthermore, the interaction between designers and AI is increasingly seen as a partnership where AI tools not only provide technical assistance but also contribute creatively, offering novel design options and enabling a co-creative experience [52, 57, 72].

Despite the promise of example-based learning and AI augmentation in supporting creativity, empirical understanding of its impact on motion design practices, especially among users with varying levels of expertise, remains limited. The differences in creating motion graphics as opposed to other domains (such as beginning with a blank canvas or the animation nature of the medium) warrant further studies. Our study aims to bridge this gap by examining how both casual and professional motion designers integrate example-based and AI-enhanced tools into their creative workflows, building on seminal works in creativity support systems and recent advancements in AI-driven design collaboration.

3 STUDYING CREATIVE EXPRESSION VIA MOTION GRAPHICS AUTHORING

In this study, our key goal was to investigate the real-life practices, perceptions of creativity, and expectations of both casual and professional motion designers when they work with a simplified tool that removes technical barriers. We wanted to gain insights into the impact of automated and example-based interfaces on creativity compared to traditional approaches.

3.1 Katika Research Prototype

To study example-based authoring, we selected the *Katika* research prototype [31] that has been designed to streamline motion graphics video creation process through semi-automated and example-based techniques. The core functionalities of Katika, as depicted in Fig. 2,

are categorized into nine primary features listed in Table. 1. This tool simplifies the creation process by automatically segmenting scripts into distinct shots, adjusting timelines to match the duration of each shot, and applying an initial background color to enhance visual consistency. Users have the ability to customize the color scheme, duration of each shot, and the style of transitions between shots to suit their creative needs.

Katika's design leverages extensive research to incorporate a comprehensive repository of editable artworks, which includes a broad selection of scalable vector graphics (SVGs). This repository not only enables users to utilize pre-existing graphics but also supports the import and customization of their SVG files, thus offering significant creative flexibility. The user interface is intentionally designed to be novice-friendly, allowing users to easily clone and modify content from other projects within the platform.

The system's smart functionality extends to its capability to automatically propose color schemes based on the user-selected main theme, though it allows for manual adjustments to ensure users can fully personalize their projects. Katika's intelligent search feature actively suggests artworks that align with the keywords extracted from the script, ensuring users can access the most appropriate tools without compromising their creative autonomy. Moreover, the platform supports the cloning of any element within a project, from individual artworks to entire scenes, facilitating easy replication and adaptation that enhances the creative workflow.

3.2 Study Method and Data Collection

Our research aimed to understand how users from different levels of expertise and backgrounds integrate the end-to-end authoring tool, Katika, into their workflow, perceive its benefits, and express their creativity. We specifically explored the types of content created by users and assessed the impact on their thought processes and creativity. The study was conducted during the Summer of 2023, allowing participants to utilize Katika in their own professional environments as a way of overcoming the limitations of lab-based studies, such as time pressure and the observer effect [12, 30].

We provided participants access to Katika software for a week, with encouragement to engage with the tool across multiple sessions. This flexible usage model catered to the busy schedules of professional users, allowing us to capture a more naturalistic insight into their interactions with the tool. On average, participants engaged with Katika for three days, conducting between 2 to 5 sessions, which provided a rich dataset of user interaction logs and audio recordings of their experiences.

Software Usage Data: We asked participants to record the screen for each session while working with the software. Using these recordings, we collected raw data on different features used in the software, the number of sessions, the length of each session, and the total time spent with the software.

Questionnaires: Before each participant started the study, they filled out a pre-test questionnaire that collected basic demographic information and data about participants' experience with motion graphics, video authoring, or general creativity support tools. At the end of the study period, each participant filled out a post-task questionnaire with six questions in a 5-point Likert scale format to evaluate their experiences and perception of authoring.

Table 1: This table lists nine broad categories of features available in Katika. These features are essential in enabling creative expression via motion graphics; note that the "implied" features, such as a graphical canvas or a layering system, are not included here.

#	Feature in Katika	Short form
1	**Script-writing:** allowing users to tackle the pre-production tasks.	scr
2	**Shot breakdown:** automatically dividing a long script into separate shots.	sht
3	**Built-in artworks:** a library of example assets that users could use.	art
4	**Library of Motion:** presets to apply to different artworks.	mtn
5	**New motion bundles:** allowing users to create an entirely new motion preset.	new
6	**Artwork editing:** enabling users to edit the underlying SVG of an artwork.	edt
7	**Curve editor:** allowing advanced animation and keyframe interpolations.	crv
8	**Video editing:** a sequence editor automatically stitching shots using transitions.	vid
9	**Transitions:** adjustable transitions to make various effects between shots.	trn

Interviews: Once the study was finished and we received the post-task questionnaire response, we conducted a follow-up semi-structured interview to delve into participants' experiences with the tool and reflect back on how and why they made different creative and content creation decisions. We further asked them about their previous video authoring experiences and how this end-to-end authoring experience compared. We also probed into participants' perceptions of the tool in enabling creative expression as well as their outlook on the future of motion graphics authoring tools. To express gratitude for their time, each participant received a $50 gift card.

3.3 Participants

Our study aimed to explore users' integration of software into their workflows and investigate their perceptions of creativity. We recruited 14 participants (9 male, 6 female) from authors' personal contacts, snowballing techniques, and online communities of professional motion designers (see summary in Table 2). The participants' ages ranged from 27 to 54.

Professional motion designers: Seven individuals had prior experience in motion design (we refer to them as professionals). These individuals worked as computer animation artists, motion designers, or game artists in various industries. Our professionals had 6 to 22 years of experience in motion design or animation and were skilled in tools such as Adobe After Effect [3], Autodesk Maya [40], Maxon Cinema4D [14] or SideFX Houdini [60]. With the professional participants, our goal was to understand how they perceived an end-to-end tool, if they could see differences in their creative expression, and the features they utilized to create their videos (Table. 1).

Casual motion designers: We refer to the other seven participants as casual motion designers. They worked in domains such as real estate, education, visualization, data science, or office management. These casual motion designers did not have any formal training in motion design but showed an interest in being able to create videos that their clients, customers, or students could consume, such as for training or advertising content. These users were somewhat familiar with presenting content using slide tools such as Microsoft PowerPoint [51] or Google Slides [61] but did not have any previous animation experience.

Including members from both groups of professional and casual motion designers allowed us to evaluate the value of end-to-end authoring in different contexts and facilitated the comparison of workflows and the perceptions of creativity and empowerment between users with different levels of expertise and expectations.

3.4 Study Tasks

We provided the participants with an example task so that they did not have to start from a blank slate. This first task (*Example-Task*) asked that they try to reproduce an existing video (Fig. 3 top). The example video was initially created by the authors using Adobe After Effects and then replicated in Katika. The 20-second video had four shots, and although the assets used in the original video were not identically available in Katika, similar assets were found in Katika's built-in library of artworks that could reasonably capture the intent of the original video. The Example-Task would allow participants to get acquainted with the tool's user interface and ensure that our participants were sufficiently familiar with the software features. After completing the example task, the participants moved to the second (*Freeform-Task*), where they could create any motion graphics video of their choice and explore their creative storytelling without predefined constraints. In essence, we attempted to provide a degree of onboarding for our participants during *Example-Task*, while *Freeform-TASK* allowed them to explore the creation on their own without any constraints. Our goal for the *Freeform-Task* was to understand how users could utilize such a tool for their own creative purposes, the features they may benefit from, and their perceptions towards the future of motion graphics authoring. Sample images of the videos made by our participants are provided in Fig. 6.

3.5 Analysis

Our study yielded a wealth of data through pre-test questionnaires, observations from users' screen recordings, post-task usability questionnaires, and follow-up interviews. Our analysis aimed to understand how the tool fits within users' workflows and perceptions of creativity and discern any differences in observed practices of professional and casual participants.

To analyze the qualitative data, we transcribed the audio recordings and conducted an open coding-based inductive approach [34, 65] to explore emergent themes relevant to our main research questions. Initially, two researchers independently performed an initial pass of open coding to generate a preliminary list of codes. These were discussed collaboratively and we used affinity diagrams to establish a unified coding scheme. Following this, axial coding was

Table 2: List of participants, their gender, their motion graphics expertise (professional or casual motion designer), their occupation, and their study-specific details, including their number of sessions during the deployment, the average time they spent per session, and the features they used when working with Katika (corresponding to Table 1). On average, while casuals were mostly concerned about creating a video, professionals experimented with more features to assess their viability.

P #	Gender	Expertise	Occupation	Sessions	Sub Time	Features used
01	Male	Professional	Animator	3 session	126 min	scr, sht, art, mtn, new, edt, crv, vid , trn
02	Male	Casual	Real Estate	2 session	106 min	scr, sht, art, mtn, crv
03	Female	Casual	Office Manager	2 session	110 min	scr, sht, art, mtn,
04	Female	Casual	Researcher	3 session	135 min	scr, sht, art, mtn, crv
05	Male	Professional	Motion Designer	4 sessions	96 min	scr, sht, art, mtn, new, edt, crv, vid
06	Male	Professional	3D Animator	3 session	90 min	scr, sht, art, mtn, new, edt, trn
07	Male	Professional	Animator	3 sessions	129 min	scr, sht, art, mtn, new, edt, crv, vid, trn
08	Female	Casual	Educator	4 session	117 min	scr, sht, art, mtn, edt
09	Female	Casual	Visualization	3 session	104 min	scr, sht, art, mtn,
10	Female	Casual	Educator	3 session	89 min	scr, sht, art, mtn,
11	Male	Professional	Graphics Artist	3 sessions	144 min	scr, sht, art, mtn, new, edt, vid, trn
12	Male	Professional	Animation Artist	4 sessions	165 min	scr, sht, art, mtn, new, edt, crv, vid, trn
13	Female	Casual	Real Estate	4 session	138 min	scr, sht, art, mtn,
14	Male	Professional	Game Artist	3 sessions	141 min	scr, sht, art, mtn, new, edt, crv, vid, trn

employed to identify relationships among the codes, leading to selective coding where recurring themes were delineated.

This methodological approach allowed us to capture nuanced insights into how both casual and professional motion designers perceive and integrate the Katika tool into their creative workflows. The thematic analysis highlighted key differences in usage patterns, influencing factors in tool adoption, and the broader implications for tool design in supporting creative processes in motion graphics.

4 FINDINGS

To provide context for our overall findings, we first present data on how participants used the application and the type of content they attempted to create. We then turn to the variations in authoring workflows between professional and casual motion designers and provide insights into participants' perceptions of control and creativity. In essence, these results indicate the perception of creativity in motion graphics once the constraints of technical barriers were lowered.

4.1 Application Usage and the Type of Created Content

To assess the application usage, we analyzed the number of sessions completed by participants and the average time per session. While we encouraged our participants to spend as much time on the software as possible, we expected varying degrees of task completion as our participants were busy professionals in various domains and were taking time out of their tight schedules to experiment with the tool. Our participants were given up to a week to work on the tool, and, on average, they used the software for 3.2 sessions and spent 36.2 minutes in each session. The total logged time was 1589 minutes, and there were 44 total sessions among the 14 participants. Table 2 summarizes the key usage details.

Task Completion: Six of the casual motion designers finished the *Example-Task*, and five of them finished the *Freeform-Task*. While casual motion designers enjoyed being able to express their
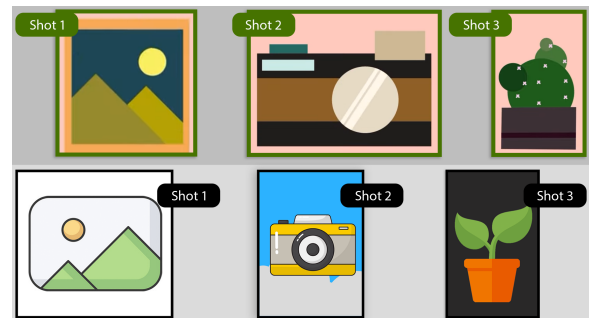

Figure 3: Example frames from the sample video that participants were asked to reproduce in the *Example-Task* (shown on top). Frames at the bottom represent their counterparts created by our participants. The goal of this task was not to make an exact replica. Rather, it was to onboard the participants and utilize the assets within the software. Participants applauded the presence of editable content as a built-in feature of the software.

creativity independently, professional motion designers reported that most of their time went into investigating the tool's capabilities and gauging its viability for different scenarios (Fig. 5 represents some of these differences.). As a result, nearly half of the professional motion designers (3/7) reported that they skipped the *Freeform-Task* to explore the software, and only four of them finished *Example-Task*. Professionals could foresee future challenges or opportunities and wanted to assess the software's capabilities for how it could augment their creative expression: *"Yeah, I didn't really finish the videos. [I] basically tried to understand what it could do for me. I think it can be used for pre-viz or for storyboarding or other things." (P5)*

Types of Content Created: Among professional motion designers who attempted the *Freeform-Task*, they either opted for working on a small piece (such as animating a piece of UI by P14)
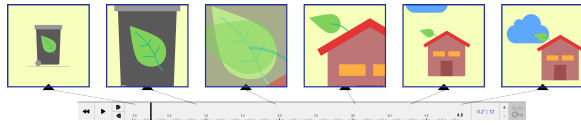
Figure 4: Frames from the animation made by P10 for the *Freeform-Task* who wanted to create an informational video on the benefits of recycling. Casual participants spoke of how going through all the steps within the same software helped them become familiar with the process of motion graphics authoring.

or attempted to put together a coarse version of a video that they would later create using more sophisticated applications (P11, P7). Casual motion designers tried to see creation through to the finish line. Some of their works are shown in Fig 6. P2, for instance, who was a real estate agent, tried to create a video describing the steps of preparing a property for a viewing. P3, an office manager, tried to create the initial steps of onboarding a new employee to their workplace. Casual motion designers viewed the software as a tool to create final pixel videos for various purposes (e.g., employee onboarding for P3, teaching content for P8 and P10, or making a logo animation for P13). Some participants found value in the built-in library of examples and assets. P13, for instance, noted that: *"Animation is one part of it. But I think for me [it] was useful because I could create a logo. I have been looking for something like this [tool] before and never found a tool that is so simple."*

Feature Usage: All of the participants in our study used the scriptwriting, shot breakdown, artworks, and motion bundle features as these are necessary for creating any video. All professional designers(7/7) and at least two casuals reported that they also experimented with the more advanced features of creating new motion bundles and used the animation curve editor Fig. 2-G. While all professional participants explored how they could edit an artwork Fig. 2-F, only one casual designer tried this feature. Finally, changing the transitions between different shots Fig. 2-I was a feature that was only explored by professional motion designers (4/7).

4.2 Variations in the Workflows and Practices of Expressing Creativity

A key focus was to observe how users with different skill levels could benefit from a motion graphics tool to produce creative content. We highlight key themes that emerged from observing the practices of casual and professionals.

4.2.1 Perceptions of Examples in Enabling Creativity. Compared to searching for content in libraries, all participants appreciated built-in examples (Fig. 2-C) and discussed how examples helped them create shots from written text. P3, for instance, who worked as an office manager and attempted to create an onboarding animation, explained: *"If I were to create a video, I would probably use PowerPoint, but then one issue is that I would have to search for all the images myself. Here [in Katika], everything is ready for me."* Professional motion designers also found the built-in library to be useful and efficient: *"I am putting together some icons as we speak. If these [examples] weren't here, I would have to search for them. This [built-in library] really saves a lot of time. It's also very handy and easy to use." (P6)*

Participants appreciated the flexibility to alter and adjust pre-existing assets that streamlined the creative journey, translating to saved time and reduced effort. P4, a researcher who tried to create a graph animation noted: *"the prefabs [artworks] that were there gave me the option to disassemble and work with them in a creative way. I haven't seen that in any other tool. Even when adding animation, that definitely helped save a lot of time."*

Beyond being able to create content more quickly, professional motion designers also spoke of how having the editable built-in examples meant that they could invest their time on more creative aspects of the work: *"Usually when [we] create videos, we have to create loads of assets. Even at the early stages. Here, everything is in-built...which allows me to focus on more important things." (P1)* Furthermore, the professionals also commended the shot breakdown feature that leverages examples to help users break down long scripts into independent shots: *"I actually really liked the scriptwriting. I could copy a script to it [Katika]; it made the shots and assembled them. This is something we have to do ourselves manually....which is in-built here." (P5)*

Overall, while both groups expected different levels of output quality, they found it useful and enjoyable to have access to examples that could simplify their creation process.

4.2.2 Enabling Creativity by Practicing End-to-End Authoring. For our casual participants, one advantage of going through the end-to-end authoring tool was that they did not invest much time in learning the software tool. They could further bypass the need to use multiple software tools (e.g., for breaking down a script into shots, adding in visual content, creating animations, etc.), which is often a deterrent to onboarding for newcomers [26, 27]. Within a few short sessions, these participants (for the first time) could learn the basics of motion design and could begin exploring their creativity in animated videos. A casual participant explained: *"I actually thought that I'd need to do a lot more on my own. Like when I saw the first task, I was quite scared that I wouldn't be able to make it. But then I saw after like an hour I had made it. Something I had never experienced before." (P9)* Similarly, P4 explained how the tool had allowed them to *learn how to think* about the motion design process: *"I actually learned a little about making animations...for example, that initial screen for writing the script; I might have a story in mind, but I might not think of it that specifically. That screen helped me. I had never thought of that before."*

It was also interesting to see how the casual participants felt empowered to create motion graphics without relying on external support. These participants viewed their own ability to author (or at least understand the authoring process) as a way to better capture and express their intent and thought process. P2, who worked in real estate, described how they could benefit from being involved in the authoring hands-on: *"A lot of times, I have to talk to the marketing person, and I have to go over the details. Here, if I could make things myself, then those specific things that I wanted were also there. Sometimes, they [details] get lost when I work with others."*

These results illustrate the side-benefit of the approaches of end-to-end authoring and built-in examples, which offer an overview of the entire video creation process, including relevant steps. These approaches, in particular, can reduce the barriers to entry for casual designers.

4.2.3 Perceptions of Using Animation for Creative Expression. Animating is perhaps the most difficult aspect of authoring any motion graphics videos as it requires a thorough understanding of topics such as time, frame, keyframes, interpolation, direction, and similar. While professional motion designers have received training (or gathered sufficient experience) in understanding these concepts, casual motion designers often lack any understanding of such topics [19, 26]. Our casual participants enjoyed using the built-in motion presets in Katika (Fig. 2-D) as it allowed them to explore various animations for which they did not have formal training. P8, who was an educator, described this technique's benefits: *I could make an animation like this in PowerPoint, but one thing that would take a long time is that I would have to manipulate many settings. Here, they [animation settings] are in-built; I click, and they appear, which is very nice.* Fig. 4 represents frames of an animation made by P10.

On the other hand, professional motion designers, such as P1, noted that they were only interested in the "most basics" that allowed them to explore various creative ideas in the initial stages quickly: *"For me, beyond the basic animations, everything else would be useless. Because why would I waste time animating here if I could do it in After Effects?"* For this population, the basic animations in the motion presets (such as fade-in, fade-out, slide into the scene from different directions, etc.) were sufficient to create initial videos. Multiple professionals spoke to the notion of *"quick-and-dirty"* authoring —meaning that they would use a tool such as Katika for quickly creating initial prototypes (animatics) of their videos rather than the finished final pixel videos.

4.2.4 Crafting a Story and Pre-visualization. Another consistent theme was that professional motion designers were more interested in crafting a compelling story than creating detailed content. This early-stage content, often referred to as animatics or pre-visualization, is almost entirely discarded by the end of the production and only serves as a guide to the creative direction. Although professionals were equipped with advanced tools, it was interesting to see them find value in the end-to-end and example-based authoring approach. For example, P6 described how creating quick-and-dirty pre-visualizations could help them unify their style: *"I guess for animatics, it would be great. Right now, we make [animatics] usually with a combination of hand-drawn sketches and some colored moodboards. This [Katika] could be a useful tool to make sure that we have some consistency in the animatics."* The professionals also appreciated the time saved when creating animatics rapidly: *"The [motion] presets are great. I can easily find something that roughly tells what I have in mind. I think that's the key, finding something easily and without having to search." (P11)*

The professional motion designers reiterated that they were only keen on the basic features in tackling their animatics-related requirements: *"I tried to make a little character, it's basically an avatar. It's not the shape I had in mind, but it's fairly easy to animate it here to see how it looks. [A] more complex one, I can do it later." (P14)* They emphasized on getting a draft representation of their ideas and sharing them with their stakeholders. Casual motion designers, for the most part, skipped the concepts of storytelling and creativity in the interest of authoring animations and visual content as they were less familiar with matters such as animatics. Since it was the first time the casuals were creating motion graphics,
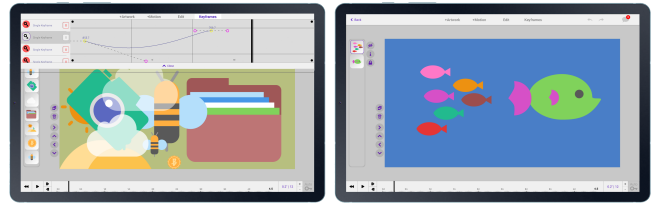

Figure 5: Example frames from the *Freeform-Task* of P5, a professional participant (left) and P8, a casual participant (right). As can be seen, casual participants attempted to accurately capture their design intent, while professionals used it as an opportunity for exploration and free-flow creative experimentation.

they were more excited about exploring the technology to make things animated on their own.

4.3 Perceptions for Automation, Control, and Creativity

Throughout our interviews, we learned that professional and casual motion designers had different expectations for how much control vs. automation the design tool should offer. Casual motion designers were more open to exploring new tools and techniques out of curiosity and explained how they usually began working with software based on *word of mouth* or *advertising*. However, these casual designers overlooked some of the novelties of the tool or had unrealistic expectations for more advanced functionality. P4, for instance, explained: *"When I went into the application, I expected to see a lot of the work done based on my text [script] with the imagery. I like to see this app go in that direction where I can just type the text into it, and it would make the animation."* In fact, many of our casual participants compared opportunities available in emerging AI tools and expressed excitement about prompt-based authoring (as they had recently seen in ChatGPT [48]) as the future of motion graphics. It seemed that the new AI tools were setting an unrealistic benchmark for expectations of new users, and their perception of creative authoring was now shaped by the notion of prompts: *"When you first told me about this software, I thought it was like GPT that I talk to it, and then it does things for me." (P2)*

Professional motion designers, on the other hand, were cautious about the automation process and expressed preferences for specific techniques (e.g., division of tasks, control over graphical assets, animating via keyframing, etc.). They did not want the authoring process and their creative control to be replaced. P12, for instance, highlighted: *"I'm being cautiously optimistic. There are so many changes coming. So much is being automated. You click, and a whole image appears. But if you think about it, it's not my creation. Someone else has done the work."* Professionals also voiced concerns over whether the actions done by the software could infringe on individual creativity: *"There needs to be a balance between what the tool makes and how much creative [input] we get from the user." (P5)* For these motion designers, the distinction between technical and creative expertise was the deciding factor for how they viewed their work and practice: *"I have two experiences; one is knowing how to use, say, After Effects. I think that is less important. Another experience is, for instance, knowing what colors work better together. Of course,*
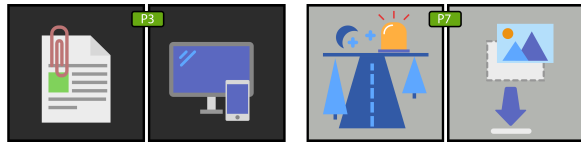
Figure 6: Example frames from participants who attempted to create videos on their own topics for the *Freeform-Task*. P3 (casual participants) explored the creation of an "onboarding video for a new employee," and P7 (professional participant) attempted to create an "animatics". These results point to a range of ideas that participants could create using the software.

that will be very important. Or, for someone else, it might be how to tell an interesting story. I think these will be more important than knowing the tools." (P6)

We found this to be a recurring theme among professionals who wished to use the tool as a means to work along *with them* rather than taking over and doing the work *for them*. Since professional motion designers possessed a better understanding in working with motion design tools, they could better grasp the significance of creative input.

5 DISCUSSION

This research contributes insights into how professional and casual motion designers use an example-based, end-to-end motion graphics authoring tool and highlights differences in how both groups perceive its impact on their creative expression. The ongoing tension between automation and creative control in motion graphics authoring is an intriguing dynamic that will likely continue as the technology evolves, mirroring discussions in other creative domains [52, 56, 59]. Recent works have been looking into the challenges faced by creatives of varying expertise [38, 46], users' mental models [24, 45], and the role of individual creative expression [13, 29]. Our work complements these prior works by demonstrating the nuances specific to the domain of motion graphics video authoring, where designers often begin with a "blank slate" compared to other types of video or image-based content. We further highlight the diversity among emerging motion designers and their individual creative workflows.

Our key findings suggest that casual users were excited about the opportunities that an automated and example-based tool offered as it lowered the technical barriers to getting started in motion design. However, professional users were wary of automation replacing the creativity of individual designers. What the motion designers in our study expressed about creating compelling motion graphics is analogous to digital cameras simplifying photography for novices; while the new cameras can simplify the technical process of taking a photo for novices, they should not and do not inherently impact the creativity involved in taking captivating shots. The challenge of reconciling human control with the potential offered by software presents new areas ripe for further research. Our key takeaways include:

(1) **Example-based, end-to-end authoring empowers** both professional and casual users to create motion graphics using built-in artwork and presets, overcoming the challenge of starting with a blank canvas. Professionals benefit by quickly prototyping creative ideas at early stages; casual users can create their videos without third-party content creators or using feature-rich design software.

(2) **The level of control and automation creates tension between casual and professional motion designers**. Professionals prefer fewer automated features and more control and customization options to support their creative explorations; casual designers are less concerned about having creative control and expect more automation to further simplify the process of generating final pixel videos.

Below, we synthesize key design considerations for developing motion graphics authoring tools that fit within a range of casual to professional creative design workflows.

5.1 Offering Hybrid Control Models for Motion Design

Our study explores a hybrid control model of motion graphics design where the human creative narrative coexists with automated features. We found that professional motion designers want to leverage automation for efficiency, while novices prefer it to simplify the learning curve without stifling their creative growth. This balance can allow experienced users to push boundaries in their motion graphics projects while enabling beginners to grasp the basics without overwhelming them with complexities, as has been noted in studies of other creative professionals [36, 57, 72].

Future work can explore the design of motion graphics tools that are adaptable to individual novice to professional processes, acknowledging that creativity is not a one-size-fits-all endeavor. For instance, professionals might use automation to handle repetitive tasks such as finding artwork for parts of the script. Doing so will allow them to focus more on creative aspects of composition and thematic development, thus leveraging automation for efficiency. Conversely, for novices, automation could manifest as tutorials or suggestion tools that help them understand basic principles of motion design or shot sequencing. As the landscape of motion graphics becomes increasingly intertwined with advanced software tools, including AI and generative AI [16], there will be a greater need to understand and balance control nuances in domain-specific creative processes [57].

5.2 Role of Automation in Supporting Creative Motion Design Teamwork

End-to-end motion graphics design is a team-based activity where there can be multiple stakeholders who have a say in the content and final production [26]. The introduction of AI and automation within motion graphics tools opens up new potentials for supporting such teamwork in creative environments [41].

Our findings indicate that both novices and professionals can enhance human-human collaboration by using tools that automate the more mundane aspects of the design process, thereby allowing team members to dedicate more energy to the creative narrative. There is potential in further exploring how this shift can enable automated systems to act as catalysts [5, 68, 70] for collaborative creativity in motion design, offering features like alternative suggestions, prototype generation, and simulations of design impacts,

which enrich the interaction and innovation within teams. We envision a future in which teams might organically form around projects with the mundane tasks being handled by automation, allowing team members to focus on their creative exploration.

5.3 Rethinking the Future of Motion Graphics Training

Our study indicates a significant shift in the types of skills that will be required for aspiring motion designers. With tools that may incorporate end-to-end authoring approaches for motion design, there will be less of a need to become technically proficient in feature-rich design software. There is, instead, a growing need for designers to be able to see the "big picture" and emphasize creative expression and storytelling. This shift is a response to the increasing automation of technical tasks more broadly [10, 63]. As illustrated in the previous two sections, the potential of automation in enabling human-human or human-AI collaboration is immense.

As motion design tools become more capable of handling intricate processes, future training programs should be redesigned to reconsider the animator's role of not being a software expert but a storyteller and an artist [69]. For example, animators should be trained to create more compelling stories of varying narrative structures, character development, and emotional engagement. This change necessitates new training for animators that nurtures creativity, conceptual thinking, and narrative skills and how individual elements contribute to the overarching message or story. Training programs need to teach emerging animators how to leverage automation and AI-based tools for such tasks. Ultimately, as the field of motion design keeps evolving rapidly, animators must be committed to lifelong learning to keep up with new tools and techniques, and pushing the boundaries of new industry trends.

6 LIMITATIONS

This study provides insights into incorporating an end-to-end motion design tool within the workflows of creative professional and casual motion designers. However, certain limitations warrant a cautious interpretation of our findings. Our in-context study approach allowed us to overcome the limitations of lab-based observations, but a broader, longitudinal deployment may be necessary to evaluate the tool's impact on both user groups' performance more thoroughly. Additionally, while the example-based interaction introduced a significant advancement compared to traditional techniques, it deviates from the emerging trend of creativity tools focused on prompt-based interactions. At the time of this study, to the best of our knowledge, there was no software capable of generating motion graphics using prompts, which precluded direct comparisons. Our study was limited to individual interactions with the tool; future research should investigate participants' team-based interactions (e.g., with colleagues and stakeholders), which could provide further insights into the tool's effectiveness in collaborative settings. Finally, as our study was done within the contexts of users, and they each could have their own pace and produce different content, a direct comparison between the works of different groups or individuals might be difficult. Future work can explore comparing specific prescribed tasks to gain insights into the success rate of various tasks among different users.

7 CONCLUSIONS

This work provides insights into how professional and casual motion designers use an end-to-end authoring approach and how perceive its impact on their creative workflows. Our findings underscore the importance of considering nuances in users' expectations, and perceptions when proposing new motion design features. Our participants foresaw a future of authoring where industry-specific tools emerge, offering a higher level of flexibility, creativity, and efficiency. Moreover, despite the growing capabilities of automation technologies, our findings indicate that human oversight and control remain integral to the creative process of storytelling. Striking a balance between content automation and creative user input to suit the needs of various users offers interesting opportunities for future research.

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