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Creating a 2D animated short film with sound and image synchronisation

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Introduction



Animation is the result of a sequence of still images that together create the illusion of motion in the real world. Animated films are about bringing cartoon characters and objects to life by moving them around, by "giving" animated characters a soul. And so, these characters can be good or evil, honest, villainous, naive, funny, deadly serious, oblivious, and so on. For this reason, some of them have always remained in our memory, because cartoons were part of our childhood. We had fun watching them, we identified with the cartoon characters, and finally we could learn something from their good and bad qualities. When we grow up, most people stop watching cartoons. But few go beyond the level where not only the body language of the characters and the visual action of the story are important, but where they also notice and learn the hidden qualities of cartoons that we mostly overlooked as children. Some want even more: they want to be involved in the process of creating animated films. They want to create new heroes to entertain new generations and provide them with new learning opportunities.

The goal of the project was to create a short-animated film that would be educational and interesting for all generations. We spent a lot of time expressing ourselves artistically to make a project where we could bring our love of drawing to the screen.

Problem Description



Our work was based on learning about the process of creating a cartoon with dubbed sound, and experiencing all sorts of problems we encountered along the way. The biggest challenge for us was lip syncing in Slovenian language and therefore finding the mouth position for the corresponding syllables. Since there are no specific rules in the Slovenian language, as there are in the English language, we started by creating the mouth positions for the phonemes ourselves.

Methods



Through the production of an animated film, we learned about the role of the scriptwriter to the producer of such a project, giving us an insight into the work of an individual on a professional project for a large production company using amateur equipment. We began our creative process by coming up with a story, and we had to make sure it had enough speech, which was the only way we could learn animation and sound synchronization. We went on with the creation of a visual image of the protagonist and other characters. In the meantime, we created a storyboard and recorded the dialogues. We began our animation with walk and run cycle furthermore, we continued with the speech animation process.

Like various literary sources, the Internet is full of tips on lip-syncing the English language, which of course differs in alphabet from ours. Since we decided to make our animation in Slovenian, we started by creating the

mouth positions for the phonemes ourselves. We began the study by photographing the lips next to each letter of the alphabet, and the images were compiled into a table (Figure 1) containing the alphabet and the viseme corresponding to each syllable. We searched the table for the letters where the differences in the shape of the lips were insignificant, so that we could group them together. Figure 2 shows all the necessary lip positions to make our animation realistic enough. The common visages are divided by the same colors as in the Figure 1.

LETTER	PRONUNCIATION	LETTER	PRONUNCIATION	LETTER	PRONUNCIATION	LETTER	PRONUNCIATION
A		B		C		Č	
D		E		F		G	
H		I		J		K	
L		M		N		O	
P		R		S		Š	
T		U		V		Z	
Ž							

Figure 1

Shapes of the lips when pronouncing the whole alphabet

LETTER	LIP SHAPE ILLUSTRATION	LETTER	LIP SHAPE ILLUSTRATION
A		C, J, S, Z	
E		D, N, R	
I		F, V	
O		H, K	
U		L, T	
B, M, P		Č, G, Š, Ž	

Figure 2

Depiction of all the necessary letters for correct synchronization and their corresponding illustrations

Results



The result of our work is a short-animated film with synchronized sound and speech. The animated film follows the protagonist who, during an art excursion in a gallery, accidentally falls into a painting and finds himself in a fantasy world where he searches for ways to return to the real world. During his visit to the world of painting, he learns about the artistic style of cubism, in which he changes his image when he comes over from the previous, real world. The animation is educational and can be used for educational purposes in art classes for children. The animated film "Hop into Reality" was created with great love for art and different forms of artistic expression.



Figure 3

Screenshot of a cartoon, a bus scene

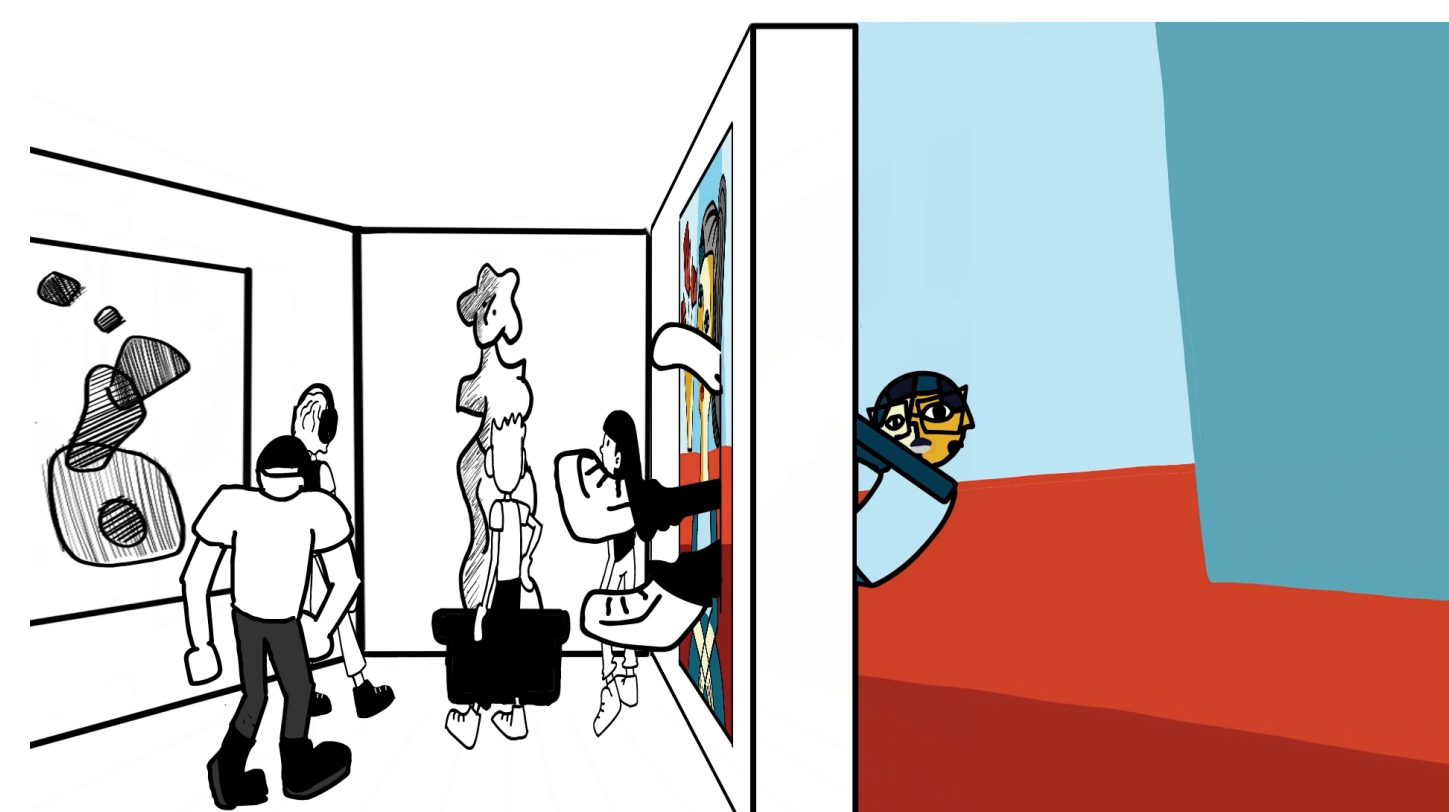


Figure 4

Screenshot of a cartoon, falling into the picture

Discussion / Conclusion



We set out to create a short 2D film with synchronized sound and image, and we succeeded with the final product. Our creative journey was not easy, as we kept encountering various difficulties during our work. But every clever solution gave us the motivation we needed to finish the work. Despite our sometimes poorly organized workflow, we are extremely satisfied with the final product. We believe that we managed to fix all the problems to a large extent, or at least mitigate them to the point where they are not so visible anymore. At the end of the day, we are not only proud of our finished product, but also very satisfied with the knowledge and experience we gained during the production process. We learned all kinds of new software, the history of animation and finally different drawing techniques. Hopefully our research into lip syncing will also help other animators with similar tasks as well. During the creating of the animation, we learned the main elements of the creative process used in the professional world of animation. Creating an animated film is a time-consuming process that most people do not realize when they see the finished result. We hope that our article has given a realistic picture of the working process and the dedication we put into each step.

REFERENCES

- Breen, D. (2016) Creating Digital Animations. NJ, Hoboken, John Wiley & Sons, Inc.
- Roberts, S. (2011) Animation of human walks and runs. In: Character Animation Fundamental: Developing Skills for 2D and 3D Character Animation. Burlington, MA, Focal Press, pp. 223 - 244. Available from: doi:10.4324/9780240522289
- White, T. (2005) Animation from Pencils to Pixels: Classical Techniques for the Digital Animator. Burlington, MA, Routledge.