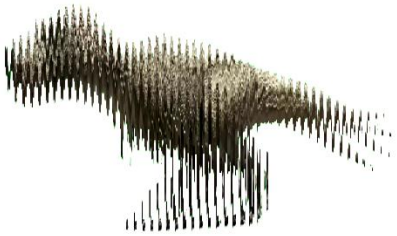
INF319: Project in Informatics – Available Project

Barrier-grid Animator

Background



Videos or animations can help to better understand processes or procedures. Unfortunately, it remains challenging to encode animations or other space-time dependent phenomena on printed media. *How should one even print an animation?* One could explain them purely textually, display them as individual keyframes side by side, rely on static images with motion blur to encode speed, etc. This project, however, is about enabling the viewer to actually "play" the animation forward, backward, alter its speed, change the watched channel - on paper!

Assignment

The goal of this project is to create a tool that can be used to generate barrier-grid animations [1,2]. It is an optical illusion that is interpreted by the human visual system as animation. Initially, your task is to process and convert a short video or series of keyframes into such a barrier-grid animation. Additionally, it should be possible to change the type of grid, for example, different patterns tailored to the object to be animated. Furthermore, it should be possible to use color filters instead of a completely transparent foil, for example, as used in other physicalizations [3] revealing different layers. Finally, you should report how well it works with animated charts from information visualization [4] or flow- and other scientific visualizations.

Context

You would be working together with an experienced PhD from the Visualization Group at the Department of Informatics, University of Bergen and potentially contribute to actual research work.

Requirements

The programming language can be chosen by the student(s), for example, MATLAB, Python, JavaScript, etc., but the goal is that the finished project could be made available as open-source tool.
A basic understanding of images and videos, color spaces, and color mixing are advantageous.

Further information

1. Barrier-grid animation: https://en.wikipedia.org/wiki/Barrier-grid_animation_and_stereography
2. YouTube Examples:
    - https://www.youtube.com/watch?v=UW5bcsax78I
    - https://www.youtube.com/watch?v=q7KswC9wCSY
    - https://www.youtube.com/watch?v=zdW7PvGZ0uM
3. Nested Papercrafts: https://onlinelibrary.wiley.com/doi/full/10.1111/cgf.14561
4. Hans Rosling (animated charts): https://youtu.be/jbkSRLYSojo?t=29

Contact

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