Manim: Mathematical Animation Engine

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» 3b1b

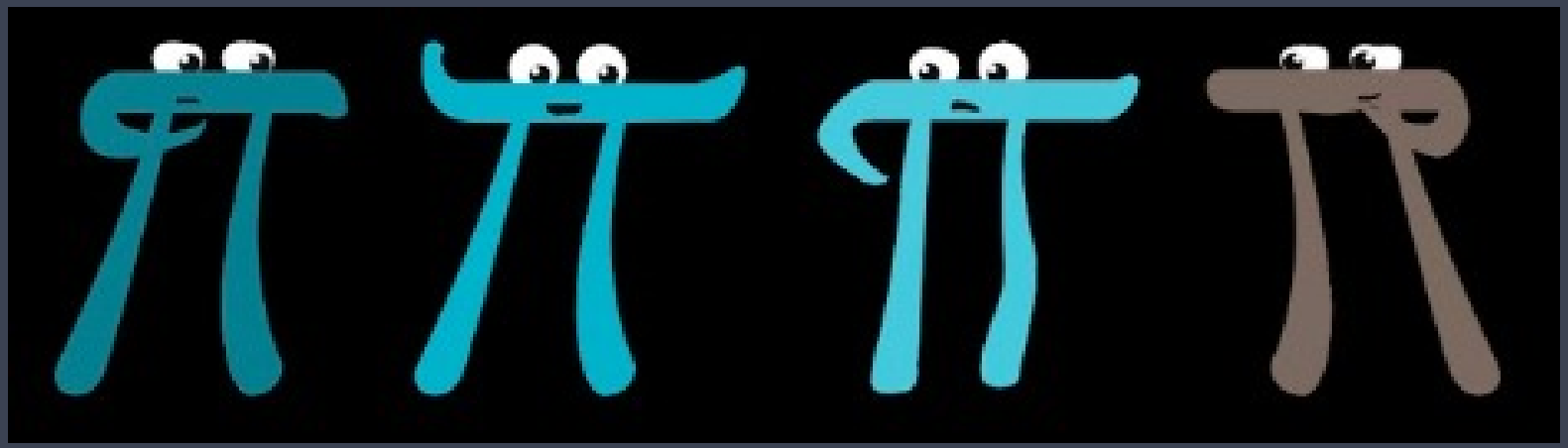

Figure: Do you know 3b1b?

» 3b1b

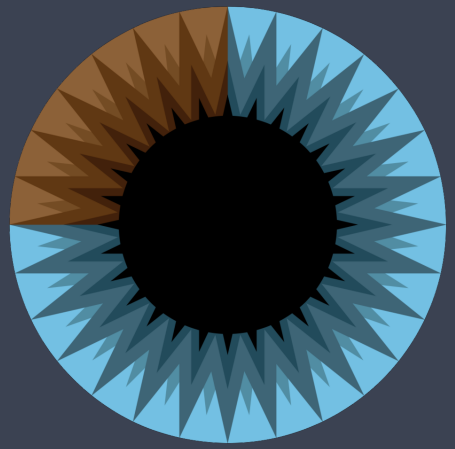

Figure: Channel thumbnail

- **3Blue1Brown** (3b1b) is a YouTube channel which centers around presenting math with a visuals-first approach.
- Created by Grant Sanderson, who studied math at Stanford and now distributes free math explanations and, more importantly, visualizations.

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About the tool

Manim is a Mathematical Animation Engine used to create precise animations programmatically, as seen in the videos at 3b1b, which was created by the same author.
The tool and it's guide is located in its **github repository**.
While pull requests to the main repository are accepted, there is a **community version repository** available where everyone can contribute.

» Installation

Via pip

```
pip3 install manimlib
```

Directly (clone the repo then run the following)

```
python3 -m pip install -r requirements.txt
```

» Documentation

Some documentation has been elaborated by the creators. Nevertheless, it is very basic, and it is difficult to learn advanced animations from it.

Documentation URL:
`https://eulertour.com/docs/`

» Using Manim

Run the following)

python3 -m manim.py [name of the file] [scene to be rendered] [flags]

Example

python3 -m manim.py example.py SquareToCircle -p

» Flags

- -p: preview
- -l: low quality(faster rendering)
- -s <n>: skip ahead to the *n*th animation frame
- -f: show the file in finder (for OSX)

» Online manim editor

There is a site in a very early development stage where you can edit manim online. Available at `https://eulertour.com/`.

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» Basic education

Visual animations and spacial examples can be of huge help for kids, as they can see colorful and meaningful videos which can help to catch the attentions of these students, making a class easier to carry for teachers.

» Higher level education

Using **manim** to teach complex topics for university students could help them to better understand certain topics that could be counter-intuitive or hard to visualize through static drawings. This could apply specially to Mathematics, Physics, or Computer Science classes.

» Virtual classes

Due to the current situation, a lot of teachers are having trouble doing understandable classes in many topics and the overall experience for students is quite harder. Preparing visual aid with manim animations could greatly improve getting students attention and explain things that could be hard to understand with traditional digital tools.

Code example: Dragon Curve

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References

- https://github.com/3b1b/manim
- https://github.com/Elteoremadebeethoven/AnimationsWithManim
- https://eulertour.com/docs/