RubixCube users Manual

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1.   **Rubik's cube**

Animating a Rubik's cube is a complex task, and a time consuming process. RubixCube will save some of that time, and make the Rubik's cube animation limits free, fun and a lot easier.

RubixCube is a mel based rig, used for the animation of a Rubik's cube. The resulting cube is fully functional, with an easy-to-use graphical interface. Any kind of animation, such as translating, rotating, or scaling the whole cube as an entity, is possible; as well as the usual Rubik's cube animation as in real life.

This script is tested and is working with maya 8.5 and newer versions. It should also work with previous versions.
This script is tested and is working under 'Windows Vista', 'Windows XP' and 'Linux Gentoo'. It should also work under other OSs.
However, if you encounter any problem, contact the author for support.

For any improved versions (as the ability to use multiple Rubik's cubes in one scene, or the compatibility with AutoKey) or any other options or requests, please contact me.

2.   **License**

Permission to use it for commercial use is required. Depending on the case, a fee has to be paid. Please contact the author for more details.

3.   **Installation**

- Zip archive contents:

  - scripts\geonak Rubix Cube\Rubix_Cube_V2.mel

  - scripts\RubixCube.mel

  - icons\Rubix.xpm

  - manual.pdf

- Copy the contents of the scripts folder into your :

  - '…\My Documents\maya\scripts' folder (windows)

  - '/home/*username*/maya/scripts' folder (linux)

- Copy Rubix.xpm into your :

  - '…\My Documents\maya*your version*\prefs\icons' (windows)

  - '/home/*username*/maya/*your version*/prefs/icons' (linux)

4. **How to use**

- To run the script, use the following command "RubixCube" in the command line, or in the script editor. You may also add a shelf button for it and use Rubix.xpm as its icon.

- When the script is run for the first time in a scene, it automatically creates a Rubik's cube with all of its controls and settings. It also opens a window that you will use in the animation process.

- Animation process:

  - Run the script.

  - **<u>NB</u>**: *Face will be the term used to designate a face or a middle row.*

    Handles are the circles around the cube, each one corresponding to a face.

  - Select the handle corresponding to the face you want to animate.

    - To rotate you may either enter an angle value in the '*Rotate Face'* textbox then click on *'Rotate'*, or you may use manual mode (advanced users) explained later.

    - To set a key click on *'Set Keys'.* Here you may use *'fewer Keys'* option (advanced users) explained later.

  - If you want to animate the whole cube as one entity (translate, rotate or scale), select Rubix_cube (for example from the outliner), and you will be able to animate it as any normal object.

- Manual mode: *(advanced users)*

  Manual mode refers to rotating the faces using the maya rotate tool instead of using the rotate button in the RubixCube window. The problem with the manual mode is due to a maya precision issue which leads to some misbehavior when dealing with quaternion rotations. So when working in manual mode, you should expect some misbehavior easily fixable from the graph editor. Don't hesitate to contact the author for support.

  - The *'Enter Manual rotation mode'* is useless when the Rubix_cube's rotations (the whole cube rotations) are set to zero. You will use it when the Rubix_cube is rotated and you need to animate a face manually. To do so, click on *'Enter Manual rotation mode'*. The rotation of the Rubix_cube in the viewport will update.

  - Animate manually using the maya rotate tool and the '*Set Keys'* button.

  - When you are done, click on '*Exit Manual rotation mode'* to get back to the position of the cube before clicking '*Enter Manual rotation mode'*.

- Fewer Keys: *(advanced user)*

  'Fewer Keys' option is off by default, in order to deny the Rubik's cube from misbehaving in some situations that an advanced user won't run through. The cost of not using this option is having lot more keys and eventually a far more cumbersome graph editor and a heavier scene.

  To use this option there is one principle you have to understand: "every face that is to be animated ALWAYS has to be keyed BEFORE and AFTER the rotation.

- ***Remarks:*** be careful not to overlap the animation of two non parallel faces.