

Creation of 3D Modeling layout by Maya Scripting

by

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This Report Presented in Partial Fulfillment of the Requirements for the Degree
of Master of Computer Science and Engineering.

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APPROVAL

This Internship titled “**Creation of 3D Modeling Layout by Maya Scripting**”, submitted by **Md.Aslam Hossen (ID. 181-25-643)** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of M.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 12 December 2018.

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I hereby declare that, this project has been done by us under the supervision of coordinator **Md. Zahid Hasan Assistant Professor** of CSE department of CSE Daffodil International University. I also declare that neither this Thesis nor any part of this Thesis has been submitted elsewhere for award of any degree.

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ABSTRACT

3D demonstrating is the utilization of programming to make a virtual three-dimensional model of some physical question. 3D displaying is utilized in a wide range of enterprises, including augmented reality, computer games, 3D printing, showcasing, TV and films, logical and medicinal imaging and PC supported structure and assembling CAD/Maya.3D Modeling is at the heart of games, Animation movie and virtual reality. That is why I choose subject of my report is "**Creation of 3D Modeling Layout by Maya Scripting**". Working in Maya Scripting by Python Programming. The main aim of this Thesis was to demonstrate several stages of the formation through Crating 3D modeling Layout. A number of 3D software such as AutodeskMayawas used to accomplish this Thesis. First of all, a framework of the complete Research work and a storyboarding were python toprogramming the complete work. Then the models were created on the 3D software. Appropriate Scripting was given to the modeling layout using Autodesk Maya. Autodesk Maya ware used for animation & lighting of the dynamic part including the Arnold rendering. Finally, the creation layoutUIpart of the thesis was done in Scripting by python programming.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Building precise models to mimic and present standards of things' acting is a general and essential technique for current science. In applications and science region, there is likewise a developing interest and pattern in displaying the world in advanced three measurements. To demonstrate and reproduce this present reality, it is a procedure of digitizing articles' shape, movement, surface and different properties as indicated by the accentuation. Much work has been done and has gotten wonderful accomplishment on computerized types of gear and programming. PC supported 3D displaying devices, including making of 3d demonstrating and Rendering are getting increasingly amazing. Displaying objects develop from items with basic structure to entangled human Character demonstrating face, hard surface. Previously, the fundamental utilizations of 3D demonstrating were visual assessment and robot direction. These days, the accentuation is moving. 3D displaying has been broadly utilized in regions including PC designs, computer generated reality and correspondence, and there is increasingly more interest for 3D content for tissue building and legacy assurance. In various fields of research and applications, 3D displaying strategies for model-information procurement and demonstrating have their own claims to fame. In this paper, the procedure of 3D demonstrating including 3D information obtaining, displaying and making format is presented fundamentally. The paper likewise talks about the 3d display make design via Autodesk Maya programming on scripting to python presents utilizations of 3D demonstrating including tissue building and format UI for demonstrating apparatuses. At long last, a few primary issues and a couple of lacks are called attention to and further difficulties predicted from three viewpoints: displaying recovery, digitizing strategy, and dynamic modeling.[1]

1.2 Motivation

CG field is an extremely imaginative field. It can likewise be extremely overpowering and aggressive. There are in every case new craftsmen, new extraordinary works, new programming thus a lot to stay aware of when all is said in done. What's more, every one of us likewise has regular daily existence, connections and families.

I am as yet an understudy, learning Character Animation. I am working in the business yet. Also, I can just envision the amount increasingly entangled and energizing in the meantime this present reality will be. I am attempting to grow great so it is simpler later on. I imagine that developing as a craftsman is a regular procedure. It is a test, and it is an incredible test I need to state.

1.3 Thesis Objective

Develop career awareness related to working in the 3D Creation of 3d modeling layout UI tools by Maya Scripting.

- a. To identify personal interests and abilities related to 3D Animation Career
- b. To identify personal creative talents
- c. To identify organizational and leadership skills
- d. To learn the production pipeline layout of 3D animation and gaming projects.
- e. To identify important trends in the python language layout documents
- f. To getting the experience to work on a professional team.
- g. To learn advanced tips and tricks that is practiced by the Research professionals.
- h. To develop 3d modeling tools to easy use for modeling every design by python scripting
- i. To achieve high standards of tools layout performance with a positive research.

1.4 Report Layout

In this report, the entire works that I have learnt during this period has discussed in a brief way. All the technical complexities that we have encountered at the period has enclosed as well. To make the discussion way easier I have used necessary figures which will be very helpful for the reader to understand.

CHAPTER 2

3D MODELING

2.1 Introduction

Autodesk Maya, typically shortened to a 3D PC delineations application that continues running on Windows, macOS and Linux. It is used to make instinctive 3D applications, including PC amusements, invigorated film, TV course of action, or visual effects. Graphics-based showing and rendering (GBMR) is a standard strategy. 3D showing programming, for instance, Autodesk Maya, can help exhibiting by correspondence. In any case, the time has come eating up and asks for various capacities for customers, especially to demonstrate scenes with confounded and sporadic structures.[1]

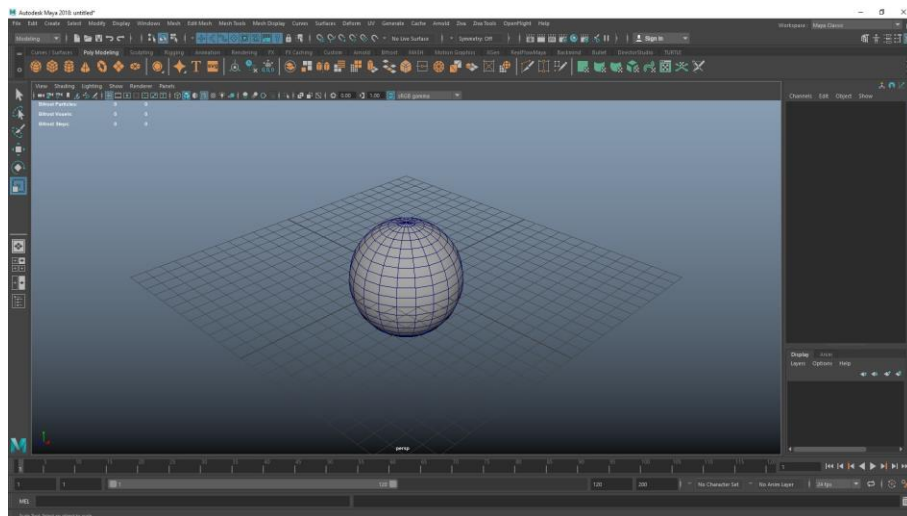


Figure: 2.1.1 Autodesk Maya Software Viewport

2.2 Applications of 3D modeling

3D Models are used in a broad extent of stimulating applications domains: Animation, Archeology, Architecture, Movies, Multimedia, Web Design. 3D exhibiting has transformed into a key development in various applications. Research on 3D exhibiting progresses the enhancement of inheritance affirmation.

2.3 Thesis of the Target

3d modeling when it was first start to mainly learning modeling project. I was using research layout UI many surface modeling, character create produced for Gaming and movie planning to hardly any for Creative Design.

2.4 SWOT Analysis

Strengths

- a) I have a good knowledge of the 3D scripting.
- b) As I can work from home I can have a flexible Research work schedule and can work unsociable hours.
- c) I would have no fixed term contract which would allow employers to employ me on a short term basis.

Weaknesses

- a) I was no previous experience working in the 3D animation and VFX industry.
- b) I do not have the contacts needed that would help me gain work.

Opportunities

- a) I have skills in different areas, which allows me to work on different things.
- b) The whole World is developing and there are more companies opening in the area.
- c) I have a strong learning scripting and different ways to access my work.

Threats

- a) The industry may change with the economic state which may result in there being less jobs and businesses.
- b) It may be difficult to create contacts in the industry and to gain clients and a good reputation.
- c) There are many other graduates that I will be competing with for a small amount of jobs.

2.5 Smart Plan

- a) Understand the steps that must be taken, the people that will have a role in the Thesis, the time constraints.
- b) Talk about the current thesis paper.
- d) Identify both short and long-term goals of this Theses. Will be created the 3d modeling layout tools in Bangladeshi movies.[3]

CHAPTER 3

PROPOSED PLUGINS AND THEIR TASKS

3.1 Plugins UI

Python scripting can be utilized for some undertakings in Maya for motion picture, diversion and liveliness industry, from running basic directions to creating modules.

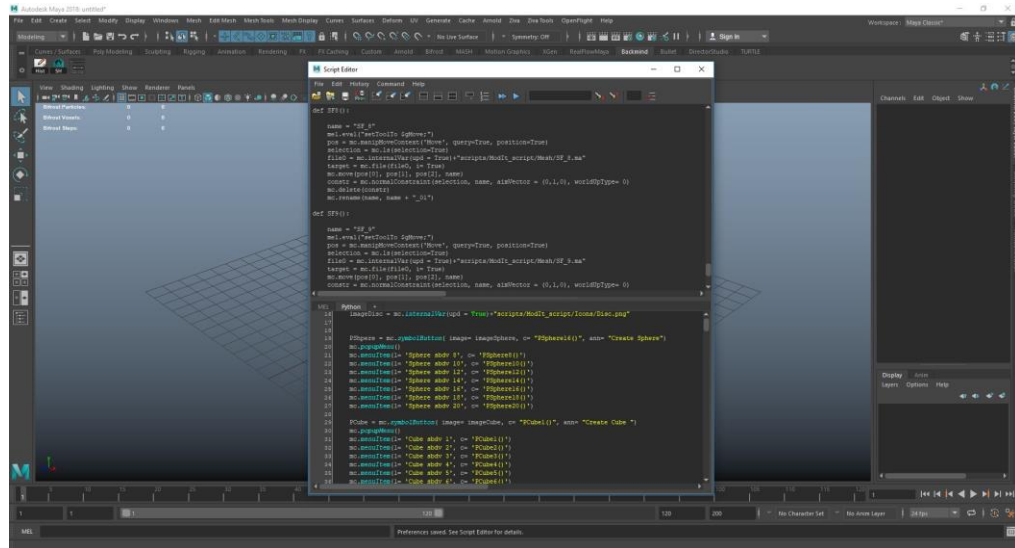


Figure: 3.1.1 Maya Scripting Editor

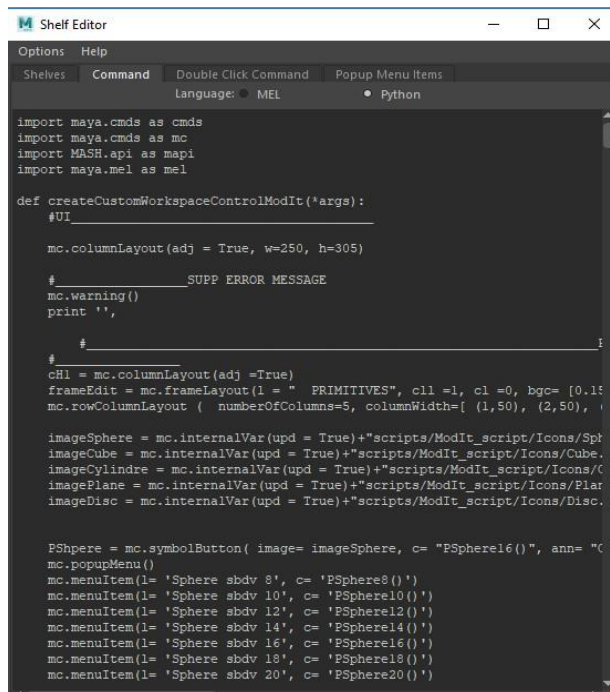


Figure: 3.1.2 Maya Scripting shelf editor

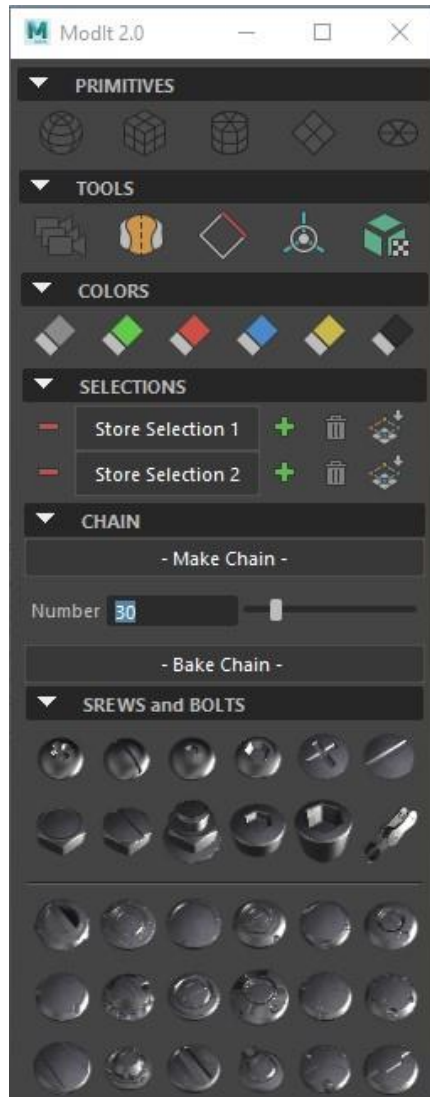


Figure: 3.1.3Plugins UI by Maya Scripting

Python for Maya I showed myself Python when I used to function as a 3D craftsman, and from that point forward I've utilized that information of self-educating and my experience as a 3d craftsman to help numerous industry experts figure out how to program with no earlier unadulterated learning. Python is the foundation of the advanced element film and recreations industry, and is utilized both as the paste that holds every one of the offices together, and additionally to make the devices that let specialists' work encourage by giving them a chance to concentrate on what they do bestwe will begin at the specific fundamentals of Python and perceive how we can utilize it to cooperate with Maya, and take it the distance to building our very own apparatuses that can computerize a considerable lot of our systems. A portion of the real that we will cover incorporate capacities, classes, and different highlights of programming Python, utilizing Python to cooperate with Maya, making UIs, and composing code that can be reused for numerous tools.[4]

- This segment is a short outline of the primary Maya modules interface. Numbered headings underneath allude to the numbered interface components in the figure.

- If you can't discover the menu you're searching for, it might be that the right menu set isn't open - see Shell Menus and shell menu sets

- You can show or conceal components (boards) in the fundamental window utilizing the Windows > UI shell menu.

- You can shroud all the interface components to expand seeing space and rather utilize the fast direction includes: the hotbox, Maya Hotkeys, and Marking menus.

- You can resize most boards by hauling their edges when a twofold headed bolt cursor appears.[2]

3.2 Primitive

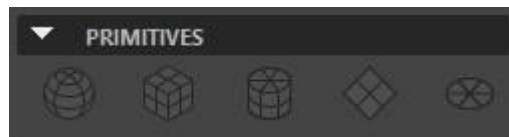


Figure: 3.2.1 Primitive Interface

Utilize these choices to set the traits of natives, for example, circles or blocks that you make from the Primitives menu. See additionally Create polygon natives.

Circle

Sweep

Determines the separation from the focal point of the circle every which way.

3D square

Note: (For intelligent creation cretive, these show up as a solitary snap setting as it were.)

Width

Indicates the width modify of the 3D shape.

Stature

Indicates the tallness of the 3D shape.

Profundity

Indicates the profundity of the 3D square.

Barrel

Span

Specifies the distance from the center of the cylinder.

Height

Specifies the height of the cylinder.

Plane

Width

Specifies the distance along the x axis (by default).

Height

Specifies the measurement along the y axis. For interactive creation, appears as a single-click setting only.

Disc

Makes a level, filled hover with fluctuating edge designs.

Sides

Decides how smooth the top is.

Subdivision mode

Decides the shape to additionally subdivide each cut of the circle into. Alternatives incorporate Quads, Triangles, Pie, Caps, and Circle.

Subdivisions

Decides how frequently the base countenances are subdivided into the Subdivision mode.

Range

Decides the measure of the plate dependent on the edge length from the middle to the other side.

3.3 Tools



Figure: 3.3.1 Tools Interface

The devices of mix the elements of the Move Tool, Rotate Tool, and UV mapping. You can likewise utilize it to enter exact qualities to scale and pivot your question specifically in the scene see.

Transform Space

Neighborhood

General controller regards the question's tomahawks.

World

General controller regards the worldspace tomahawks.

Turn Around

Focus

Turns around the focal point of the question instrument.

Turn

Turns around the rotate point. You should move the rotate point far from the focal point of the question for this to have

3.4 Selections

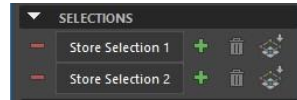


Figure: 3.4.1 Selection Interface

Use the Tool Settings window to specify Symmetry and Soft Selection settings. When you work in a texture editor panel, the Select Soft Tool has texture-editor specific options.

Common Selection Options

Camera based determination

Whenever on, you can just delicate select segments that are not discouraged by different segments with respect to the present camera.

Choice Style

Figures out what happens when you each model drag the mouse in the scene.

Marquee

When you drag your cursor over segments in the scene, a marquee shows up. When you discharge the mouse catch, parts inside the marquee are chosen.

Tip: You can rapidly great flip choice styles. Holding Tab subsequent to making a marquee determination briefly initiates Tab Drag select, letting you rapidly include and expel parts from your current marquee choice.

3.5 Chain

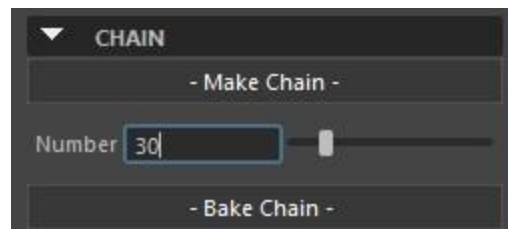


Figure: 3.5.1 Chain Interface

In a view, click on the location in your model where you want to create a joint. The joint is automatically centered in the model. If your model has multiple mesh layers, centering mode minimizes displacement and places the joint in the center of the layers.

3.6 Screws and Bolts



Figure: 3.6.1 Screws and Bolts

In this view, just click the any object polymodeling inserts any screws and bolts model create.

CHAPTER 4

CONCLUSION AND FURTHER CAREER

5.1 Conclusion

This is the first occasion when I have utilized the 3D demonstrating despite the fact that I am sure about utilizing the innovation I have encountered troubles with it. At last I needed to re-try the cleaning. The jaw left shape and the frog's situation on the lily cushion ended up out of line, these set aside opportunity to straighten out. Consequently I kept the entire procedure as fundamental as could reasonably be expected, now that I have increased some experience I would utilize these abilities to make all the more in fact propelled 3D demonstrating and activities later on.

Layout pipeline tools create was the biggest problem; it took so long and was very time consuming. This was something I had not expected; it was frustrating as I was working to a deadline. This proved to be very problematic as after the first scripting the python were still on show and I had to redo the process again.

I used websites to find tutorials on how to use different tools, methods, effects and techniques. These I included in my design of my two frogs' and the background scenes. I am pleased with the final 3D modeling layout tools, although I realize there is always room for improvement.

5.2 Scope for Further Career

There are many Work open doors for quality artists and related experts like TD, media engineer and diversion designer, character designersdeveloper, key casing artists pipeline, 3D modeler's engineer, format specialists and so on exists in following divisions on the looseAdvertising

- Animation Industry Of Technical Director
- Future Film & Television
- Cartoon production
- Gaming Industry

- E-learning

Movement itself is an industry, and as industry it's on diversion portray studio. There exist various activity houses both in Bangladesh and abroad who work for customer bases. An illustrator and sight and sound proficient can likewise fill in as specialist or begin his own venture given he has pioneering aptitudes and assets for speculations. Artists work in different limits. For subtleties on profession alternatives in Animation, FX, Graphics and Gaming.

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