

Simulation of 3D Garments under the Concept of Biomorphism Inspired by Radiolarians using CLO 3D

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Abstract - This project aims to design and simulate a collection of digital garments under the concept of Iris Van Herpen's biomorphism inspired from a microorganism called "Radiolarians". These are protozoa which has intricate mineral skeleton patterns found on deep ocean and are best known for their complex, beautifully sculptured minute skeletons. These modelled in artistic design on naturally occurring patterns or shapes. Biomorphism refers to clothing that is inspired by life and modelled in three dimensions. Iris Van Herpen uses the concept of biomorphism with the help of complex softwares and 3D printers to help her develop the garments. We are about to manipulate these fine patterns to a digitally simulated garments on avatars. Biomorphism refers to design inspired from life and modelled in three dimensions. The work is intended to develop a collection of garments from the concept of biomorphism inspired by a microorganism called Radiolarians by conducting a primary research with the target population to understand their preferences. After going through a series of Literature reviews and Survey taken, then Interpretation board is done following by Inspiration board and mood board. These designs are about to develop in an advanced 3D modelling software and render it out as a final output. Rendering can be done on any type of softwares, the more advanced the software the more precise rendering with all the textures and details.

Key Words: Simulation, Biomorphism, 3D modelling, 3D design, Radiolarians, CLO 3D

1. INTRODUCTION

Biomorphism is an art movement that began in 20th Century. It is modelled in artistic design on naturally occurring patterns or shapes. Biomorphism refers to clothing that is inspired by life and modelled in three dimensions. Iris Van Herpen uses the concept of biomorphism with the help of complex softwares and 3D printers to help her develop the garments. The recent development in technology has made a dramatic transformations in the designing field. We are about to develop garments from the concept of biomorphism inspired from Radiolarians with an advanced level 3D program called CLO 3D. CLO 3D is a 3D developing program which is used in both fashion and apparel industry specifically designed to make garments. CLO is a robust 3D program which allows you to create garments with intricate

details with immediate changes to patterns, textures, details and instantly simulate. This reduces design preparation time there by saving time and dive into the design process. Pattern files are saved and exported as .dxf file and CLO 3D file can be found as .zprj, .zpac. Rendering can be done either in CLO 3D, Marvelous Designer and other 3D programs like Blender (an open source software), Cinema 4D, Maya or 3DS Max (These are proprietary software). These 3D models from CLO 3D can be bridged to other software as .FBX, .OBJ or a collada file and can be rendered. The more advanced the software, higher the render output.

1.1 Influence of biomorphism in Design Industry:

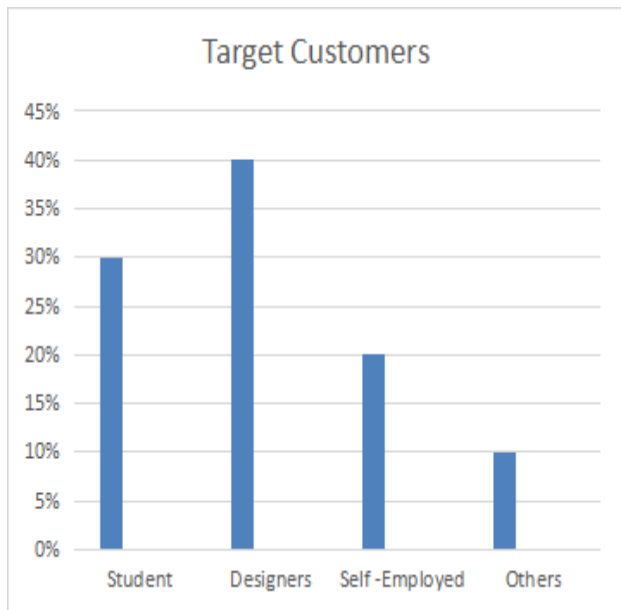
Biomorphism comes from the Greek word Bios means life and morphe means Form which combined to have life form. Biomorphic design is based on the shape of Human and Animal forms and inspired from life or Nature. Biomorphic designs reduce stress and enhance creativity. Contemporary biomorphic designs could stimulate neural areas that establish the uniqueness of the objects. Such emphasis would be relevant to the nature. At 2018, Iris Van Herpen collaborated with architect Philip Beesley using techniques like laser cut and 3D printing, her work is mainly inspired by the fluidity and complexity of natural forms and architectural things. While constructing her garments, they were made either with the electromagnetic weaving or 3D hand cast transparent leather. Her designs were mostly inspired from nature, its beauty, mystery and chaos are the inspirations. Her laser cut and 3D printing of high tech fabric creates the visual language because of her work purely inspired from Fluidity and complexity of her natural and architectural design elements. Radiolarians are the protozoa which has intricate mineral skeletons found on deep ocean and are best known for their complex, beautifully sculptured minute skeletons. Their species are found at water depth at 4000m. During, their life cycle these organisms absorb silicon components from aquatic environments because they live in deep ocean. Their well-defined skeletons are known as Test. They survive several weeks without prey. These are design elements on naturally occurring patterns or shapes and modelled in three dimensions. These are modeled in artistic design elements on naturally occurring shapes or patterns. These design elements are mainly inspired from life elements such as water, air, living things such as plants, human beings etc. These are more abstract or surrealistic form of design.

Biomorphic are used in architectural concepts of developing sustainable buildings with higher aesthetics. Clothing has a 3D form and many parts are connected based on the human body forms. The advancement of Technology, materials and 3D printing provide a completely new definition. 3D modelling is becoming an innovative process, as they use scanning technology to design new Fashion Accessories or Clothing that perfectly fit for humans.

1.2 Analysis and Interpretation:

Age Group: Out of 33 respondents, 83.8% of the respondents are under the age group of 18 - 24 years, whereas 9.7% of the people were under the age group of 25 - 30 years. This shows that the age group of 18 - 23 are the majority of the respondents compared to other age groups.

Target Customers: Out of 31 respondents, 40% of the respondents were designers, 30% of the respondents were students, 10% of the respondents were people which belong to other profession like Fashion Consultant and 20% of the respondents are self-employed -



● **Preferences of Knowledge of the software**

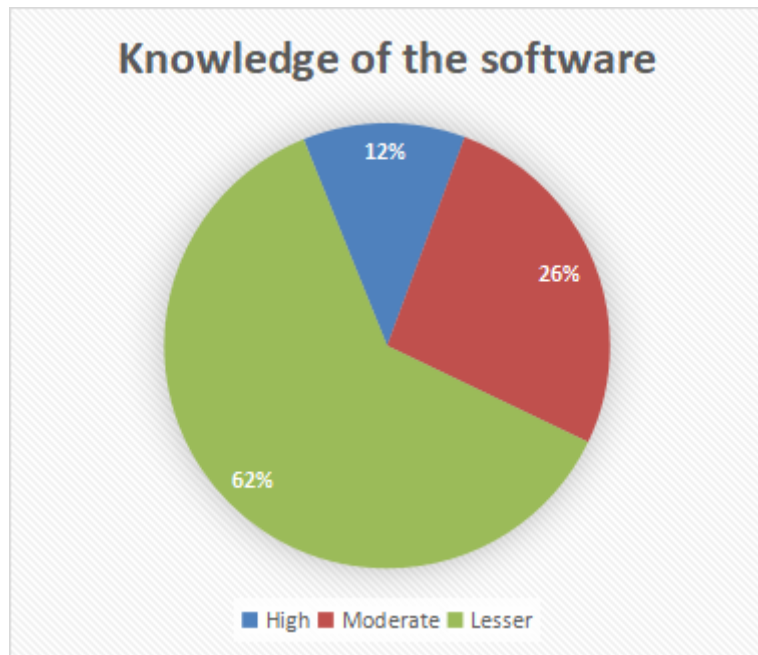


Chart 2: Preferences of Knowledge of the software

From the above pie chart, 62% of the respondents are having less knowledge about the software, whereas 12% of the respondents have knowledge about the software.

● **Interest in learning the software**

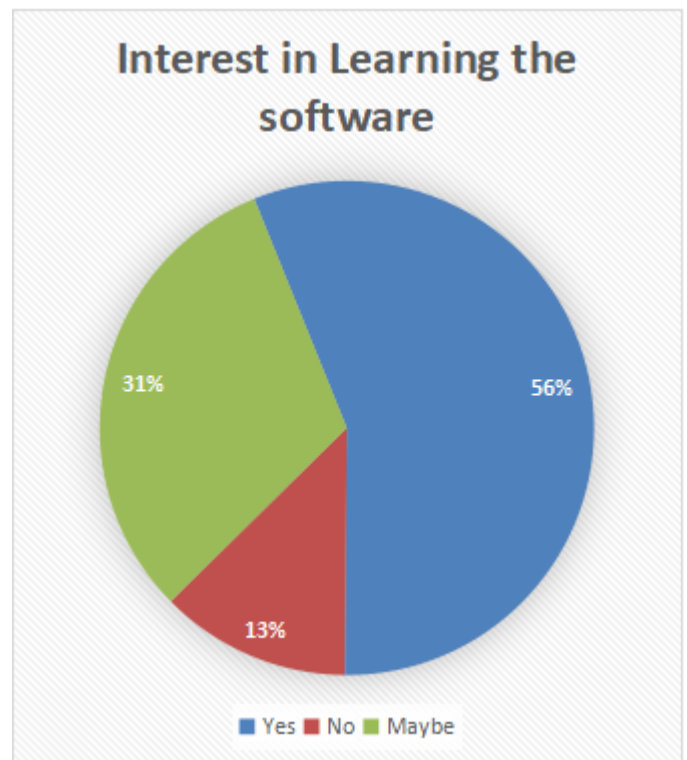


Chart 2 : Interest in Learning the software

Here 56% of the respondents show their interest in learning the software whereas 31% of them are showing partial interest in learning them.

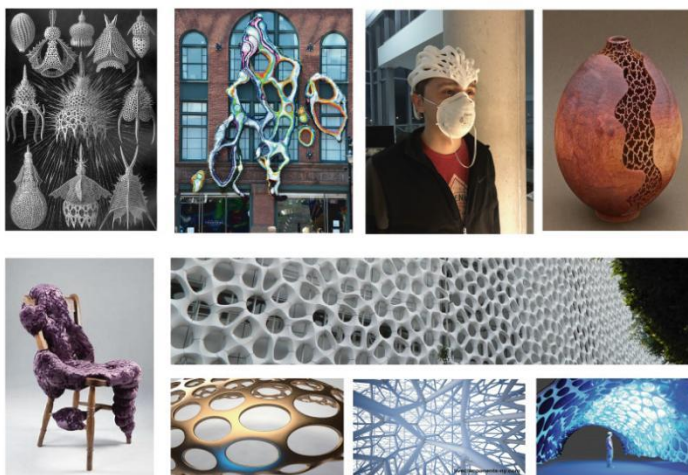
2. Styling Portfolio

Trend Board:



The above mentioned board explains the trends for the work to be carried out. The pantone colors of the year 2022 is called "Very Peri" it is a dynamic periwinkle blue hue blends with violet, red etc. The above styles are bead embellishment, Tight Cat suit, Big boots, double chain etc.

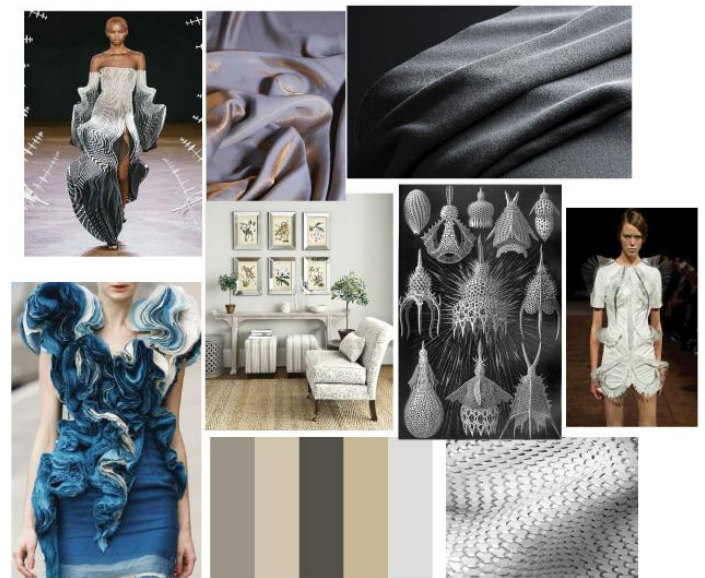
Inspiration Board :



The Inspiration board is the collection of Images which helps us with the start of any design project. The above mentioned figure will be the inspiration for our project work. Since our work is based on the concept of biomorphism our main source of inspiration sculptures or building which are all in the structures of the inspiration. Building which are in abstract shapes are taken which matches well with the

inspiration we had taken which is the Radiolarians. These images are sourced from pinterest.

Mood Board:



A Mood board is a pictorial direction for any design project. This board consist of a series of images of inspiration, color palette, fabrics etc. The above figure is the mood board for our project. Our project aims at developing a collection of garments in an advanced level 3D program called CLO 3D inspired by Biomorphism.

3. CONCLUSION

Developing a digital collection of garments made and simulated entirely out of advance 3D program will solve many problems which are found while production. Creating garments in these types of software will help improve our knowledge and adds as an additional skill in the field of Fashion and Apparel Industry. Learning 3D is very useful because 3D is becoming acceptable everywhere and people and designers are shifting their minds towards 3D. On a survey from Fashion Designers, they are about to get their hands on experience by learning and implementing 3D on their design process as they see these programs are time saving and make quick decision on their design to their clients. Hereby we have done our work from initial sketches, to survey and creating boards such as inspiration board, mood board and Trend Board for our design

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