

# SIMULATION OF DIGITAL GARMENTS UNDER THE CONCEPT OF BIOMORPHISM INSPIRED BY RADIOLARIANS USING CLO 3D

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## Abstract:

This project aims to style and simulate a set of digital clothes beneath the construct of Iris Van Herpen's biomorphism galvanized from a organism referred to as "Radiolarains". These are protozoa that has tortuous mineral skeleton patterns found on deep ocean and are best identified for his or her complicated, superbly sculptured minute skeletons. These modelled in inventive style on naturally occurring patterns or shapes. Biomorphism refers to covering that's galvanized by life and modelled in three dimensions. Iris Van Herpen uses the construct of biomorphism with the assistance of complicated softwares and 3D printers to facilitate her to develop the garments. we tend to point of manipulate these fine patterns to a digitally simulated clothes on avatars. Biomorphism refers to style galvanized from life and modelled in 3 dimensions. The work is meant to develop a set of clothes from the construct of biomorphism galvanized by a organism referred to as Radiolarians by conducting a primary analysis with the target population to grasp their preferences. once researching a series of Literature reviews and Survey taken, then Interpretation board is completed following by Inspiration board and mood board. These styles are on the point of develop in a sophisticated 3D modelling computer code and render it out as a final output.

**Keywords:** Simulation, Biomorphism, 3D modellin

## Chapter 1 Introduction

Biomorphism is associate front that began in twentieth Century . it's modeled in inventive style on naturally occurring patterns or shapes. Biomorphism refers to galvanized by life and modelled in Three dimensions. Iris Van Herpen uses the construct of biomorphism with the assistance of complicated software and 3D printers to assist he develop the clothes. The recent development in technology has created a dramatic transformations within the coming up with field. we tend to ar on the point of develop clothes from the construct of biomorphism galvanized from Radiolarians with a sophisticated level 3D program called CLO 3D. CLO 3D is a 3D Virtual Fashion program that is used in both fashion and apparel industry specifically designed to make garments.

## Objectives

- ★ To promote the usage of 3D programs in Fashion and Apparel Industries.
- ★ To come up the with the simulations of collections in an industry used software.
- ★ To execute complex structures in a simple 3D program.

## Scope of the work:

- ★ To assist Fashion Designers to possess a data concerning about the aesthetic and fit before construction of the actual garment.
- ★ This work is done to help designers saves time by having Real time Simulation.

## Intended Approach

This work is meant to develop a set of clothes from the concept of Biomorphism galvanized by a organism referred to as Radiolarians by conducting a primary analysis with the target population to grasp their preferences. Once researching a series of Literature reviews and Survey taken, then Interpretation board is done following by Inspiration board and mood board.

## Chapter 2 Literature review:

David Lazarus, "A Brief review of Radiolarian Research" March 2005-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. [1] Laurence D. Zuckerman, Thomas J. Feller "Radiolarians" 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.[2]Fashion Designer Iris Van Herpen's Biomorphic Design by Beverly Pereira - 2017At 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.[3]Y Joye - Leonardo, 2006 "Cognitive and evolutionary speculations for biomorphic design" doi 10.162Biomorphic 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 may stimulate neural areas that establish the uniqueness of the objects.Such emphasis would be relevant to the nature. [4]Kim Nadel, "Biophilic and Biomorphic Design" published on 2004While 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.[5]DS Kumar, K Purani, SA Viswanathan,"Biomorphic Design Forms in Servicescapes" retrieved from Journal of Services MarketingThese 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.

Biomorphism comes from the greek word Bios means life and morphe means Form which combined to have Lifeform. 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.

Biomorphics are used in architectural concepts of developing sustainable buildings with higher aesthetics.[6]Young Sun Moo, Minjin Cho 2020, "Clothing Sculpture as Architecture" doi :10.3389 Department of Clothing and Textile, Kyung lee University, SeoulClothing encompasses a 3D form and lots of elements are connected based on the shape forms.The advancement of Technology , materials and 3D printing provide a completely new definition. 3D modelling is turning into an innovative process, as they use scanning technology to create new Fashion Accessories or Clothing that perfectly fit for humans.[7]

## Chapter 3 Research Methodology

### Research Design:

#### Designer Study:

We are about to design garments with new concepts with existing software.

### Ideation:

- After Literature, the next process of our work will be the ideation of design.
- The Idea of the project is developed by making initial sketches.
- The concept will be implemented with a series of sketches ranging from 20 – 30 sketches and a collection of five sketches will finalized for Rendering.

- Mood board and Inspiration Board will be carried out further.

**Analysis:**

1. Research will be carried out about the biomorphism and Radiolarians.
2. Ideation is carried out by making initial sketches.
3. After Initial sketches, design exploration will be carried out, with styling portfolio preparation for the progress of work.
4. From Design Exploration, final sketching will be done and five styles will be finalized for development.

**Procedure:**

- Design Exploration will be made after initial sketches or rough sketches.
- With Reference to design exploration, mood board, reference board and color Board will be developed digitally with the help of software.
- The software which will be using for all boards will be done in Adobe Photoshop or Adobe Illustrator.
- Proposed work will be finalized using CLO 3D software in the project work set up.

**Project Work Plan:**

- As the initial sketches were developed, digital Flat sketches of the garments will be made.
- After Finalization of flat sketches, development and simulation of 3D garment will be made and rendering of 3D garments are done.

Activities to be carried out:

- Creating Initial sketches
- Making of Final Illustration at Adobe Photoshop
- Development of 3D garment at CLO 3D
- Rendering of Garments

**Sampling Size**

- ★ Target Population : People at the age group of 18 - 25
- ★ Sample Size : 33
- ★ Sampling Unit : Individual

**Trend research:**

With the assistance of the trend analysis, analysis has been taken by researching some analysis supported current trends of 2021 with the assistance literature, websites and visual analysis. consistent with the trend analysis, individuals are leaning towards

quick Fashion that relates to appear sort of a street wear or street style. This class has been growing within the last few years thanks to the pandemic that created people change over to casual style rather than formal style.

	Fashion styles	2019-2020	▼ 2020-2021	% Change
1	Streetwear	17,286	70,689	309
2	Sports wear	15,427	34,484	124
3	Formal or office	11,551	19,268	67
4	Retro	4,496	5,904	31
5	Haute couture	15,949	5,674	-64
6	Vacation	4,410	4,594	4
7	Boho & prairie chic	2,762	3,758	36
8	Ethnic	1,774	2,736	54
9	Cowgirl	1,413	2,574	82
10	Military	2,637	2,313	-12
11	Goth	1,045	1,977	89
12	Rocker / biker chic	1,354	1,866	38
13	Androgynous	2,001	1,737	-13

According to the above image, people’s interest has been turned over to Street wear rather than other kinds of wear such as sports or formal wear. Streets wear has played a major role of among the people in the years of 2020 - 2021 which is 300% higher than pre - covid at times of 2019

### 3.3 Analysis and Interpretation:

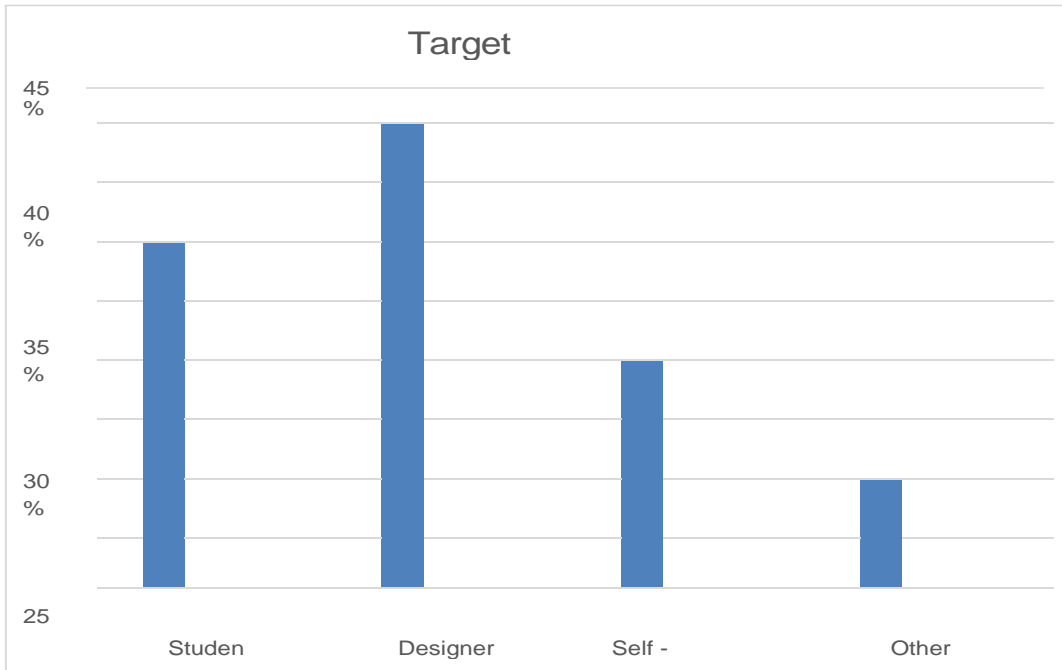
The Sample was collected from 33 Respondents.

#### ★ 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

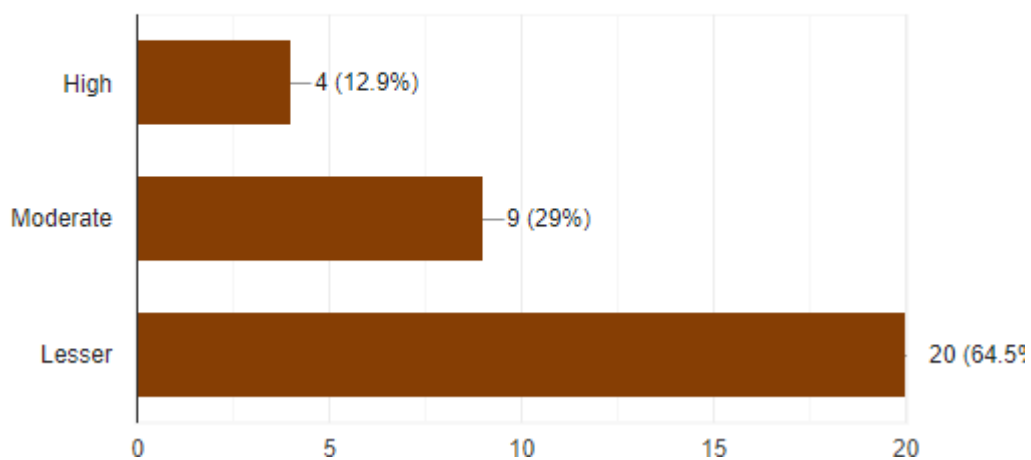
Out of 31 respondents, 80.6% of the respondents were students that is 25 students, 9.7% of Designers that is 3 designers and 9.7% of Self employed and 3.2% where they belong to other profession such as Fashion Consultant etc.



★ Preferences of Knowledge of the software

How much do you know about CLO 3D?

31 responses



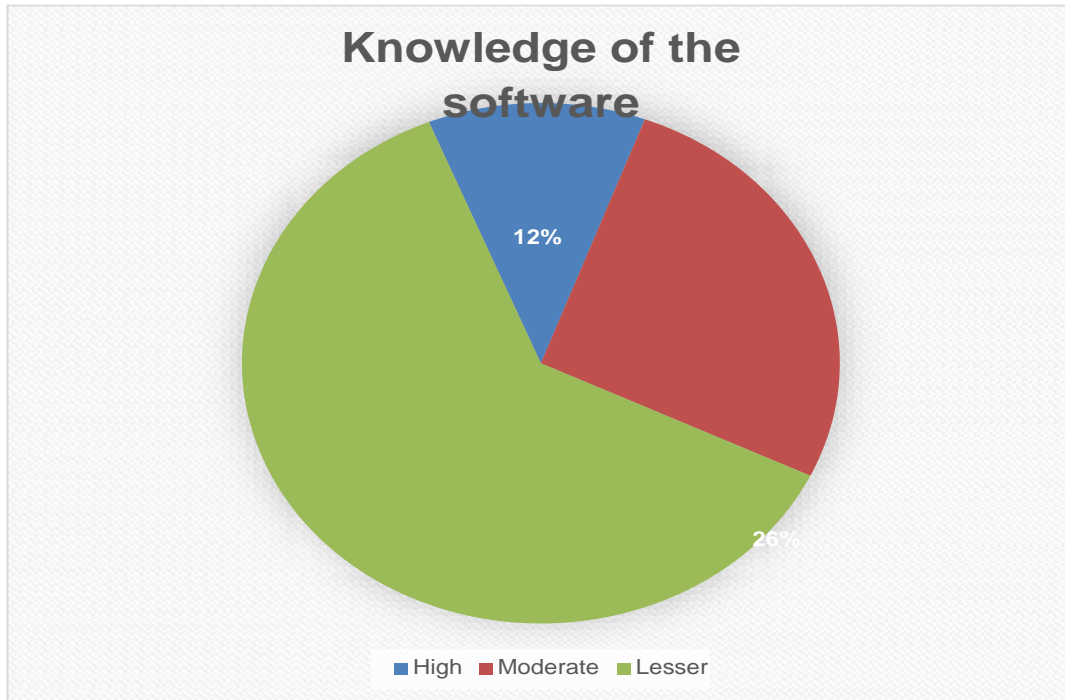


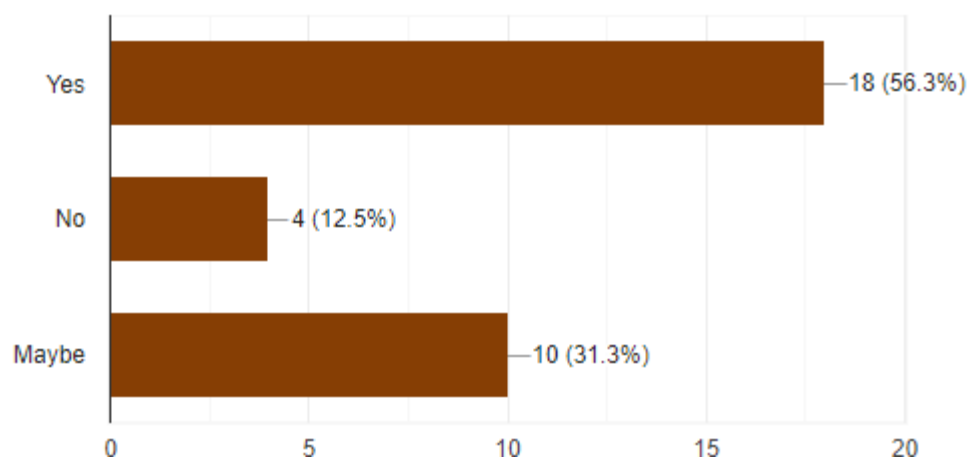
Figure3.1

From the above figure 3.1, we can say that 65.6% of the respondents were having less knowledge about the software .

**Interests in learning the software**

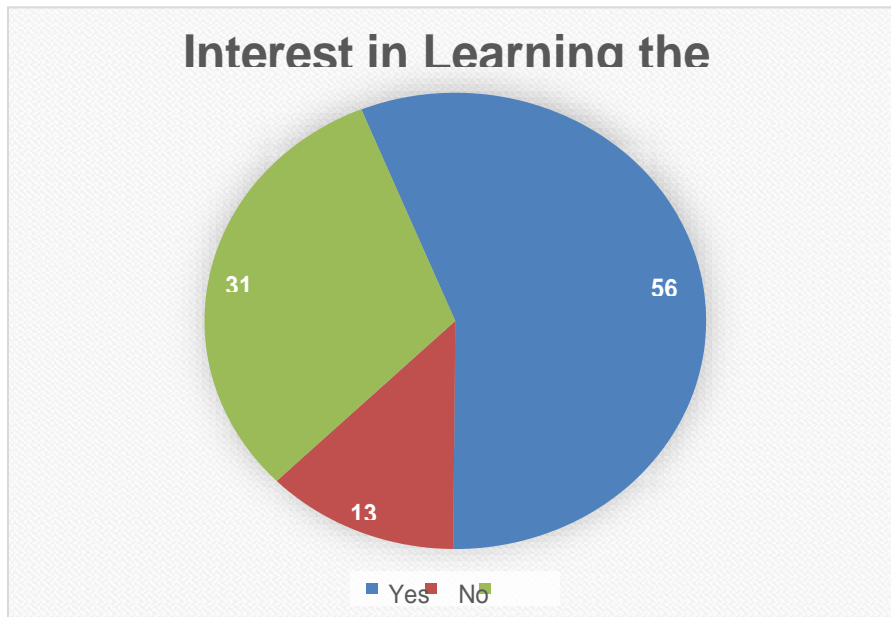
Are you interested in learning CLO 3D

32 responses



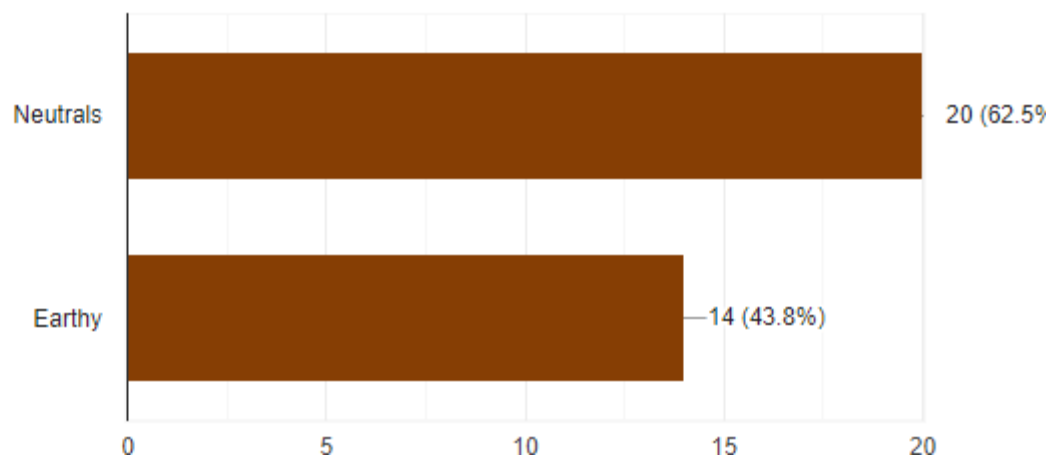
From the above figure 3.2, 56.3% of the respondents have voted favorable in learning the software and 31.3% of the respondents were showing partial interests in learning the software.

**Opinions on Colors:**



Choose which colors you would prefer for biomorphic 3D garments

32 responses



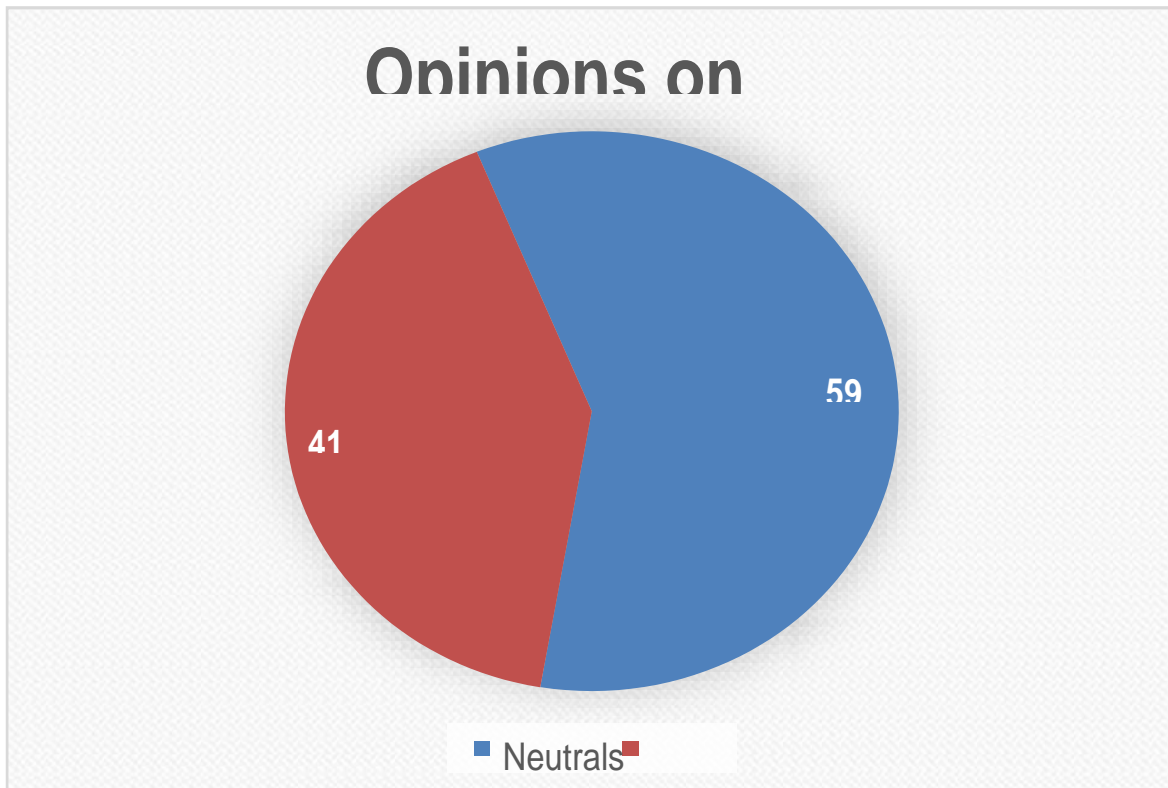


Figure3.4

62.5% of the respondents prefer neutral colors whereas 43.8% prefer earthy colors.



### Chapter 4 Design

#### Trend Interpretation Board



**Figure 4.1 Trend Interpretation 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 periwrinkle blue hue blends with violet , red etc. The above styles are bead embellishment, Tight Cat suit, Big boots, double chain etc.

### Inspiration Board

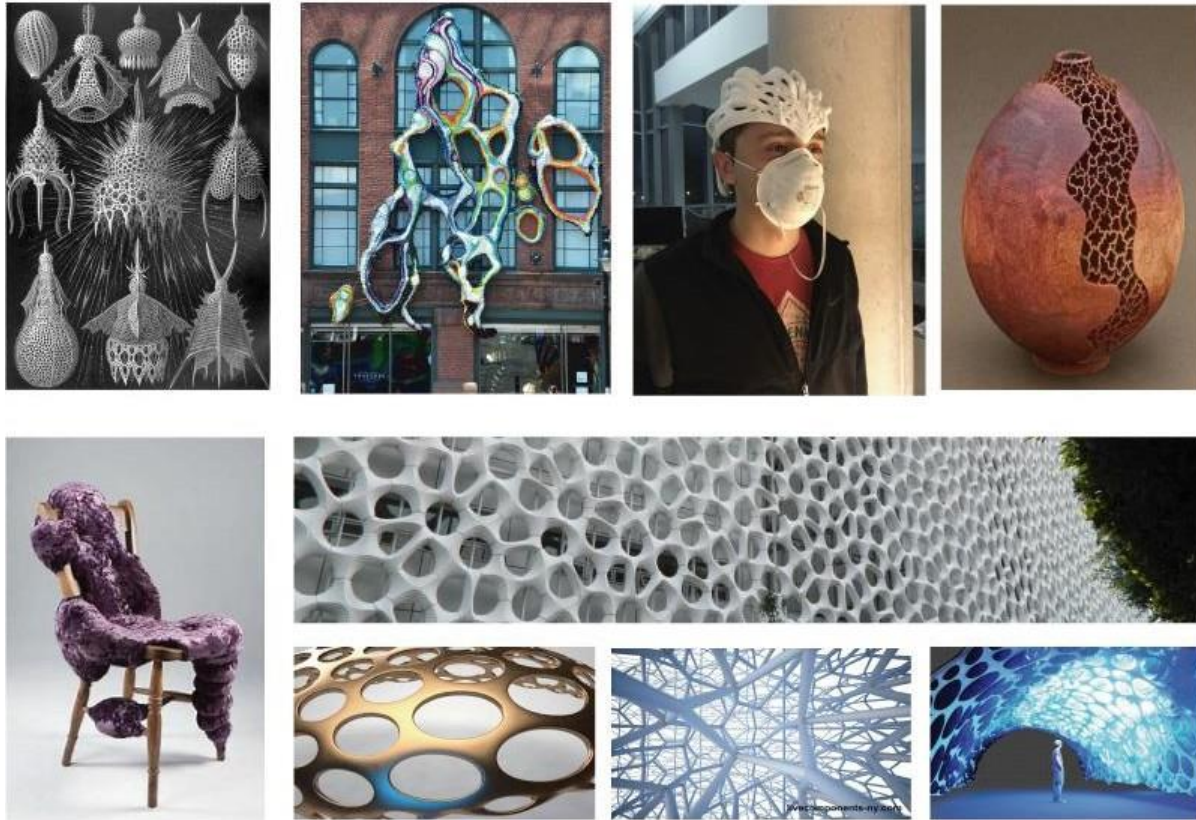
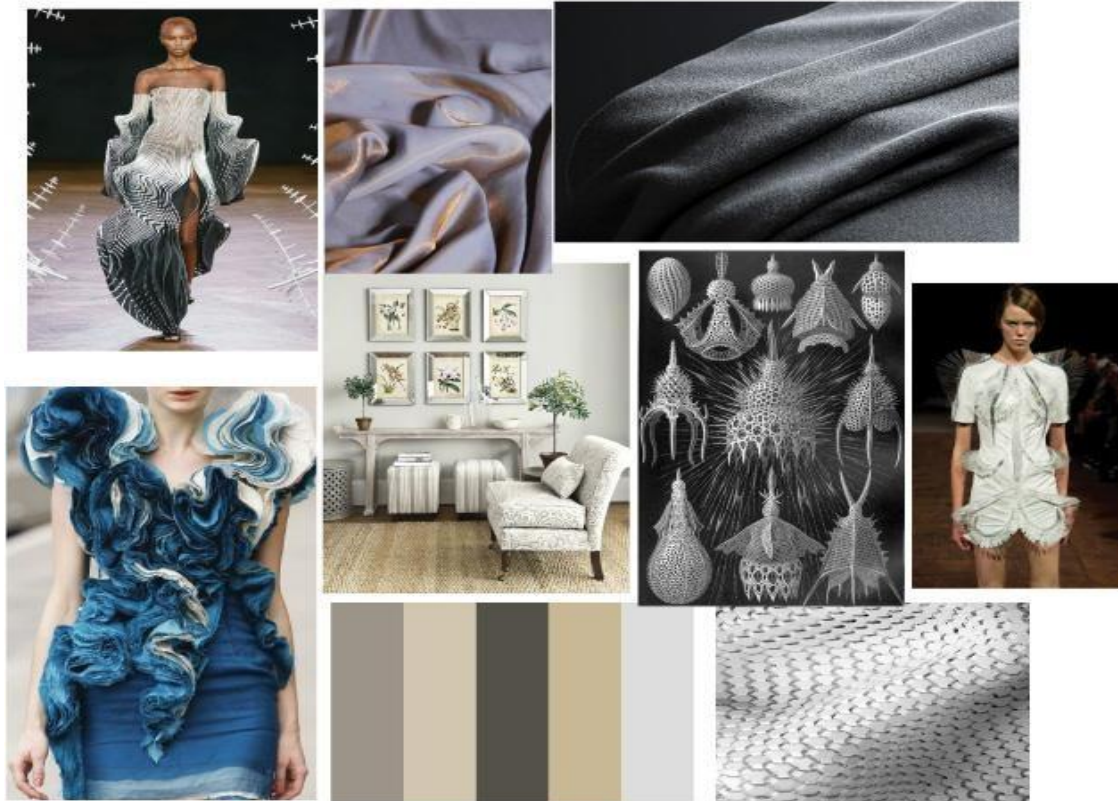


Figure 4.2 Inspiration Board

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



**Figure 4.3 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 Iris Van Herpen's Biomorphism.

### Design Exploration



Final Sketches



## 5. Renders

### Stage Renders



Turntable Images













## 6. Conclusion:

Developing a digital assortment of clothes created and simulated entirely out of advance 3D program can solve several issues that are found whereas production. making clothes in these varieties of computer code can facilitate improve our data and adds as a further ability within the field of Fashion and rag trade. Learning 3D is extremely helpful as a result of 3D is acceptable all over and designers are shifting their minds towards 3D and herewith we've got done our work from Survey to Final Renders.

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