

## Mohammad Dahodwala

Mechanical design engineer with +7 years of experience in design, development and manufacturing of Composite (GFRP/CFRP), GRC, Glass and metal parts, panels & Façade/ structures, execution of projects using 3D tools such as Catia V5R21, Autocad, Solidworks and Rhino3D. With knowledge in 3D printing using various materials

## Experience:

- Hyundai construction and engineering.  
Design Engineer – Façade (GRC/Glass), March 2020 to present.
  - Coordinating, reviewing and developing Façade works as main contractor with traits and products from different subcontractors in order to drive and complete the project on scheduled time for installation sequence and planning methodology, within project cost
  - Over looking submission in form of shop drawings with technical details for approval, installation and assembly of products such as **GRC, GRP, Aluminum and glass structures**.
  - Providing Structural and technical engineering solutions for production and development of structures with their respective fixtures.
  - Leading all the necessary meeting with clients, consultant and subcontractors with project lead and MOM preparation.
  - Reviewing site, coordinating with QA/QC, with **BIM coordination** along with advising onsite inspection with other similar roles.
  
- Affan Innovative Structures  
Design Engineer – Façade (GRP/Glass), Feb 2017 to March 2020.
  - Design and development for production of large Composite (GFRP) Façade panels using CatiaV5, development of concept using **Generative shape design** methodologies, verification of engineering requirements, developing connections.
  - Making programming code (macro) for making the process of 3D modelling faster using VBscript. Automate for better less use of recourses and time.
  - Flattening of Glass from 3D curved surfaces by interfacing **Grasshopper, Rhino and Catia**. Developing various methods to flatten complex 3D curved surfaces using developable surfaces methodologies in laying flat glass on curved panels.
  - Coordinating in BIM with Contractors and managing digital models with information of models that help with decision-making during the building process with contractors for installation support activity.
  
- Premier Composite Technology  
Junior Design Engineer, Nov 2014 to Feb 2017.
  - Design of Mold with setups, templates and fixtures for Composite Structural/Non-structural parts including concept design, de-molding of composite shell.
  - Preparation of Lamination Drawing, Weight calculation and FRP Drawing for Composite parts with assembly drawing preparation. Preparation of BOM/BOQ.
  - Co-ordination with Supervisor/line leader in charge to ensure any queries on the factory floor and any mistakes are resolved at the earliest.
  
- Mazagon Docks Ltd, Mumbai.  
November 2013 to February 2014.
  - Industrial Internship at Platter and Assembly Shop
  
- Mumbai University.  
August 2010 to May 2014.
  - Bachelors of engineering, Mechanical

## Skills:

Catia V5	●	●	●	●	●
Autocad	●	●	●	●	●
Rhino3D	●	●	●	●	
Solidworks	●	●	●		
Keyshot	●	●	●		
Vbscript	●	●	●	●	
MS Office	●	●	●	●	●
3D printing	●	●	●	●	

## Materials:

Composite – Glass & Carbon fiber.

Glazed Façade

Aluminum – ACP Cladding

PLA/PETG/ABS

## Contact:

Dubai Investment part1, Dubai. UAE.

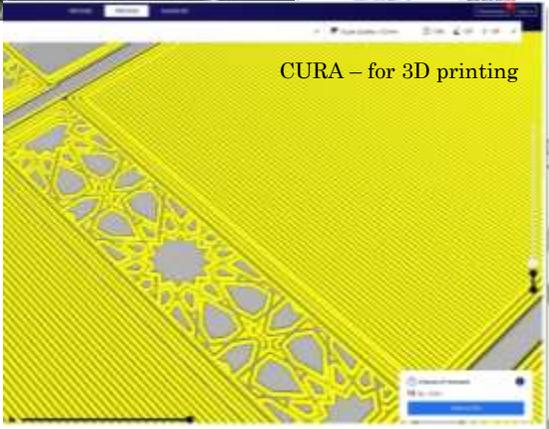
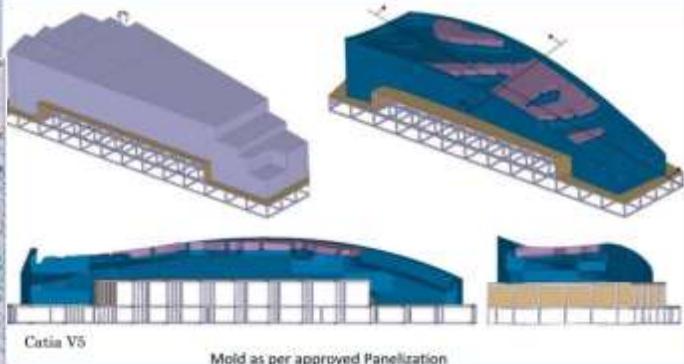
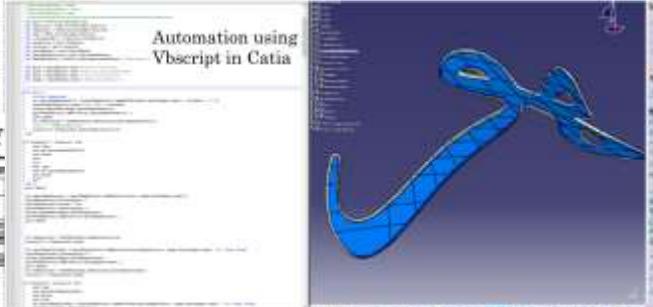
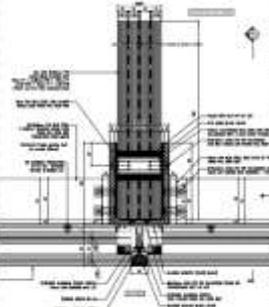
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# Technical Skills:

- Design & Detailing of Composite, Metallic parts & Assemblies. Working on production and design of Composite (GFRP & CFRP) with laminates and metal parts for structures and other purposes.
- Working with Double and single glazed glass Façade, aluminum cladding and metal works understanding.
- Developing models with Class A, Developable surfaces using Generative shape design. Design of molds and drawings for the same.
- Automation using VB script in Catia V5 to make process faster. Flattening of 3D curved surfaces to planes by interfacing Grasshopper, Rhino and Catia. Developing various methods to flatten complex 3D curved surfaces using developable surfaces methodologies in laying flat planes on curved panels.
- BIM Coordination in Navis works and Revit.
- Knowledge in additive manufacturing with generating gcode. files used for 3D printing and finishing with materials PLA+/PETG/ABS
- Drafting ability in Catia V5, AutoCAD™ and Solid Works™.



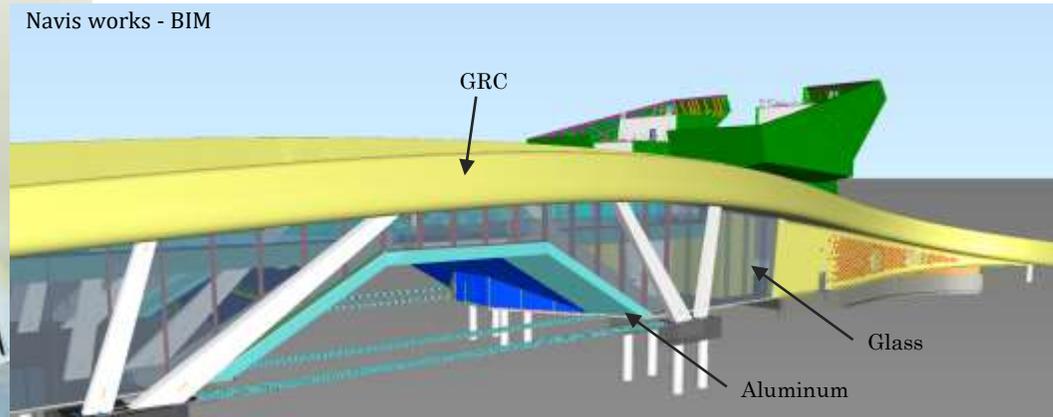
## Ain Dubai – Terminal Building

Façade (GRC/GRP/Glass), March 2020 to present.

At over 250m, Ain Dubai is the world's largest observation wheel and forms the spectacular centerpiece of Bluewater's towering high above the coastline, Ain Dubai will provide unparalleled 360-degree views of Dubai's urban landscape and key attractions. Once completed, this marvel of modern engineering will join the ranks of Dubai's most exceptional landmarks.

### Tasks and Responsibilities:

- Coordinated the design input from the 5 specialist designers/ suppliers appointed by Hyundai across the project.
- To guide them through the complexities of the design to ultimately obtain the required approval to allow construction to proceed.
- Overcame significant number of technical challenges with the team and played a key role in developing innovative solutions for.
- Also responsible for 4D (3D + schedule) modelling of the structure, terminal building and extensive temporary works to assess the constructability and importantly the safety of each stage of the construction.
- Developing and overlooking the GRC and Glazed façade part of the project with reviewing shop and As built drawings, handing over with completion of the project.





## Museum of the Future, Dubai.

Façade (CFRP/GRP/Glass), Feb 2017 to March 2020.

Stands at 78 meters in height with 1,024 fixed fiberglass panels, each individually molded and finished with stainless steel and glazing. With the intricacy and detail of each panel. Currently, around 80% of the facade panels are being lifted and fixed into place. The final layout of the script was made possible through parametric scripting, Each panel is unique in shape as the Arabic calligraphy covering the façade is molded into each individual composite panels that makes up the exterior cladding, using more than 600,000m<sup>2</sup> of multiaxial glass and carbon prepreg, with the black letters also acting as glass windows in the façade.

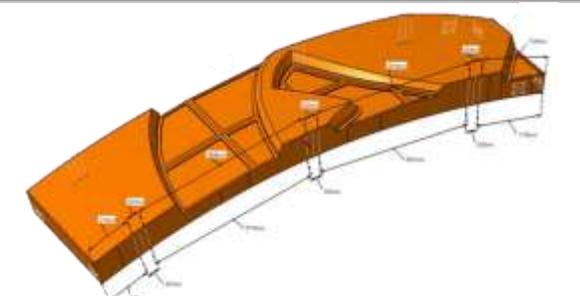
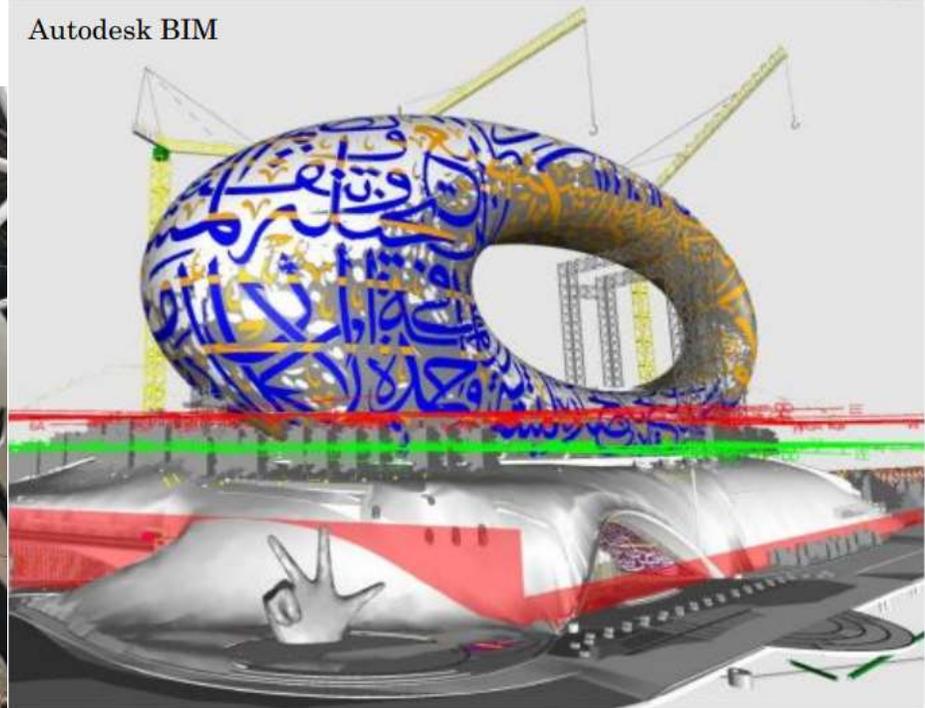
### Tasks and Responsibilities:

- Fortuitously, the CATIA software (Dassault Systèmes) that was used for the execution of projects to provide solutions, uses to drive the input for CNC machines is generated using 3D CAD program used by the aerospace industry to design complex aircraft and composite structures.
- In addition, our team of engineers using different modules overcame the challenge of complex curved panels in production and development stage,
- Rhino 3D and AutoCAD. All of the drawings in CATIA, as well as the laminate design, which gave us the ability to do such complex machining.

Catia V5



Autodesk BIM





## Apple Store, Kunming

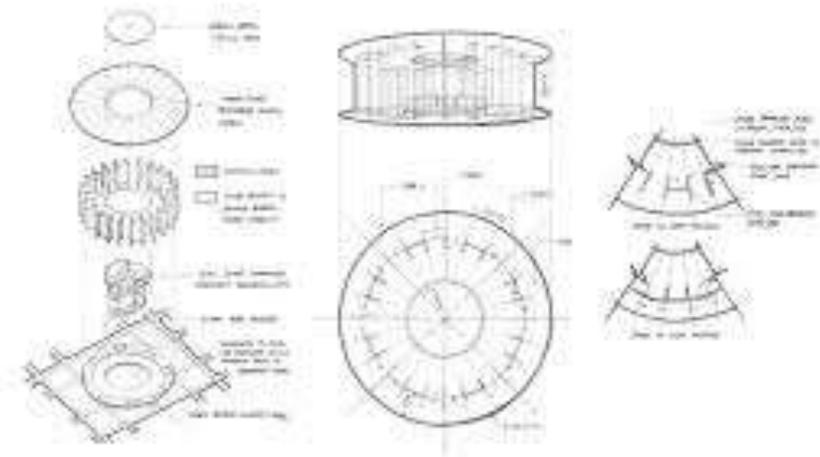
Façade (CFRP/GRP), June 2016 to Feb 2017.

The Kunming Apple pavilion has achieved a remarkably pure structural approach using

only four single glass panel walls to support a single CFRP roof, with all connections in silicone resulting in maximum transparency. The main challenge behind the Kunming pavilion lay in the combination of unconventional materials, combining glass, Carbon Fiber Reinforced Polymer (CFRP), and acrylic in an efficient and elegant structural system while accounting for the seismic load the structure may encounter. CFRP and acrylic are popular materials in other industries, like yacht building and large aquariums, but less common in construction

### Tasks & Responsibilities:

- Making 3D model from the given input shapes with finalizing panel structure.
- Mold design for panels and production drawings with the laminate sequence drawings.
- Providing assistance to project lead with QA/QC and other tasks at hand with executing the project in time.



## Mataf Elevated Walkway, Makkah.

Façade (CFRP/GRP), Nov 2014 to June 2016.



The largest carbon fibre reinforced civil structure in the world; the mataf consists of two walkways. The outer ring stands 13 metres high whilst the lower second ring stands 4 metres high. The floor panels for each ring are manufactured from a carbon epoxy laminate with a structural foam core. The surfaces are then covered with sintered glass. The beams that structurally support the floor panels are also carbon epoxy reinforced parts. The ceiling panels of each ring are moulded into decorative patterned panels using the same epoxy foam sandwich/carbon reinforcement construction. Each panel is also embedded with LED lighting.

### Tasks & Responsibilities:

- Design of Mold with setups, templates and fixtures for Composite Structural/Nonstructural parts including concept design, de-molding of composite shell.
- To ensure accurate production of technical drawing in very short time period in line with external architect's model.
- Preparation of Lamination Drawing, Weight calculation and FRP Drawing for Composite parts. Preparation of BOM/BOQ..
- Co-ordination with Supervisor/line leader in charge to ensure any queries on the factory floor and any mistakes are resolved at the earliest.
- Preparing Assembly Drawing as per Project and also supporting Installation team.



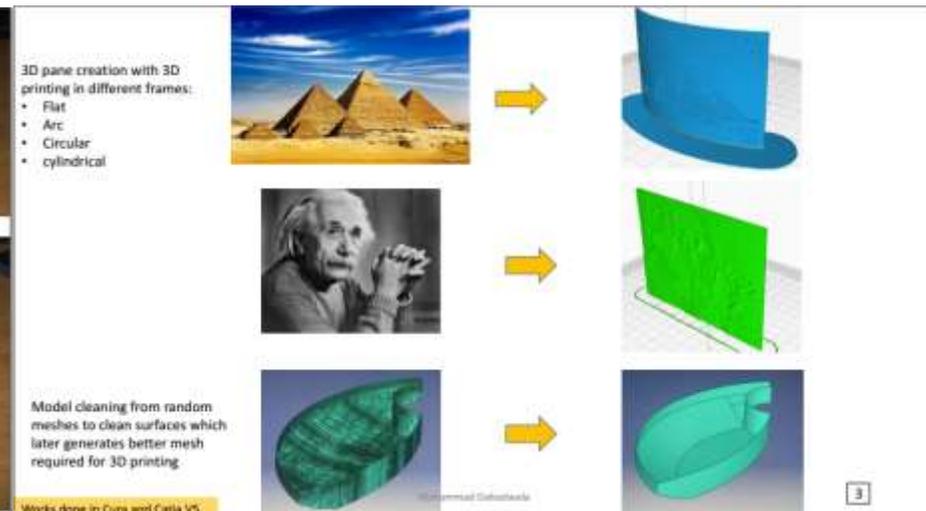
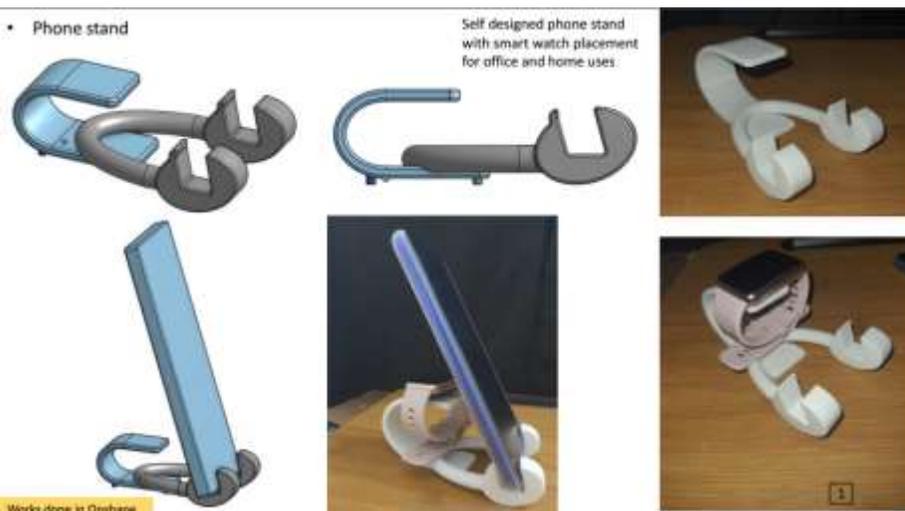


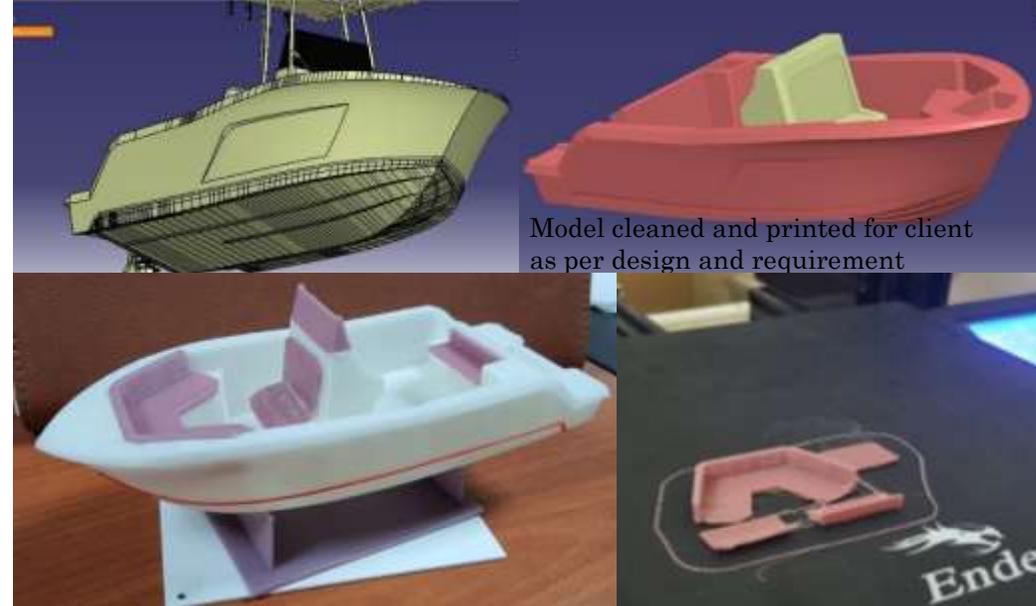
## Additive Manufacturing/3D printing

Freelance, April 2021 to present.

Using the technology and power of additive manufacturing to create physical models from digital 3D models. Developing various models in CAD software and crosslinking with process such as FDM/SLA bringing incredible designs to realization. Self thought designer with skills such as:

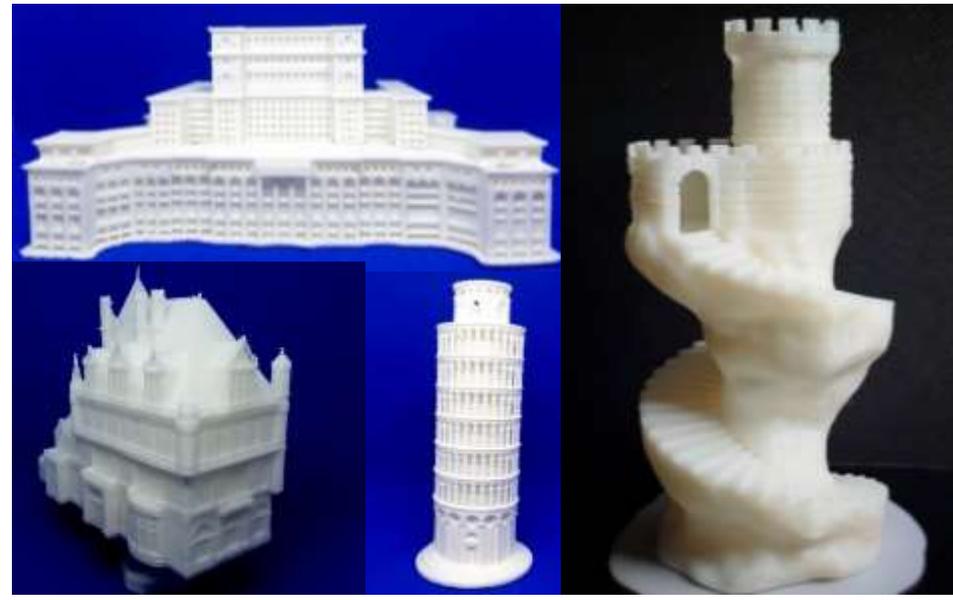
- Developing 3D mesh models from CAD designs after fixing them to provide clean surfaces required in printing.
- Making prototypes for various clients with product and part development. Maintaining form and minute details for the design part
- Adjusting layer thickness to provide smooth product and reduced material used for weight saving. Making models to different small scale as per requirement.
- Knowhow in Cura and other such software with advance functions to generate layering and gcode files.
- Technical basic awareness of printer for extruder, nozzle dia, filament temperatures and retraction setting necessary for 3D printing.
- Printing models with least amount of time by using variations in mentioned settings.
- Testing various and final model to deliver final product.





Model cleaned and printed for client as per design and requirement

Architecture models/projects with minute details

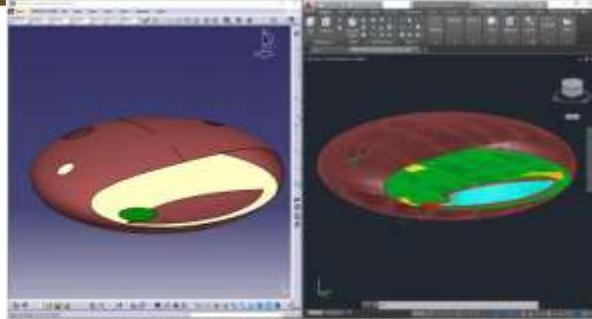
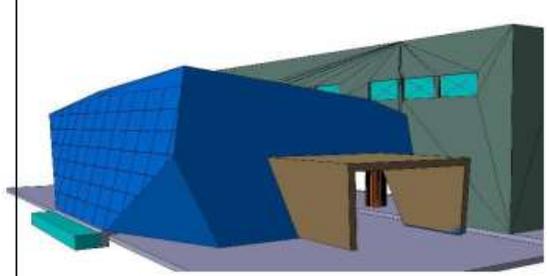
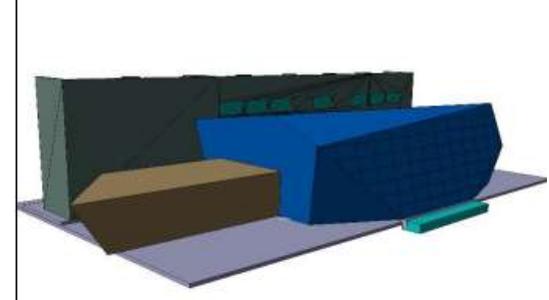
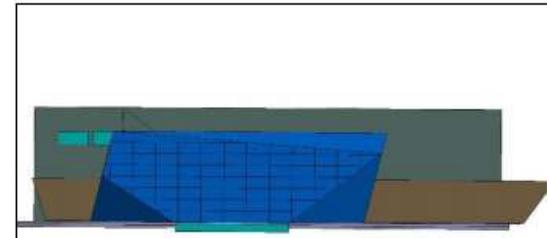
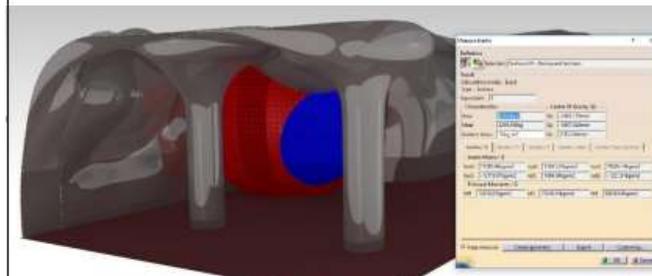
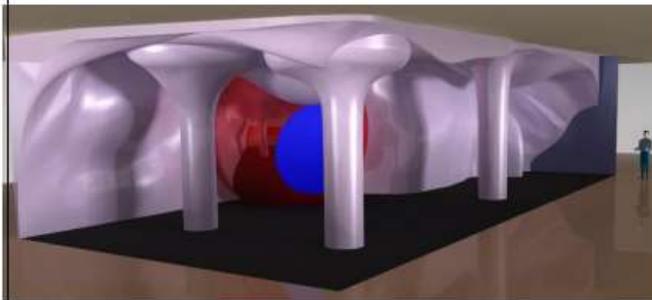
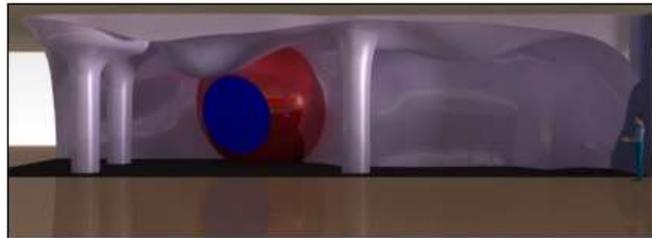
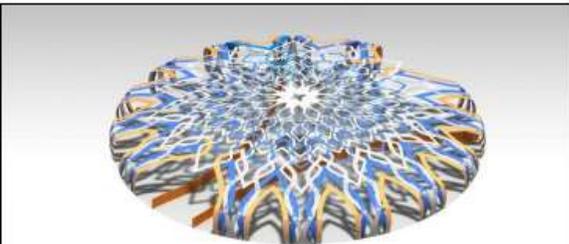


Other artistic works:



# Proposal development

- 3D modeling and rendering as per the proposed design.
- Converting mesh model/wire frame in to smooth 3D surface model.
- Sketch tracing, Dynamic fitting, simulation and animation creation.



Thank you.

References:

Ian Seo

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Work relationship: Design Manager

Company: Hyundai E & C

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Company: Affan innovative structures

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Work relationship: Senior Structural Engineer

Company: Affan innovative structures