Permutable Morphologies

Grasshopper Masterclass

Parametric Design Webinar.

http://**competitions**.uni.xyz

Brief

Permutable Morphologies is a Parametric Certification webinar Course that focuses on designing forms by means of algorithms. The course is based on understanding the process of building a shape, translating a standard 3D modelling process into grasshopper vocabulary and then automating it to interpolate infinite design iterations as solutions while documenting design problems for further use.

The course is carefully crafted for beginners and advanced users alike. It doesn't matter if you are someone who has no prior knowledge of visual programming or scripting and want to start from the scratch. Alternatively, if you're already somewhat experienced, and you want to know methods to enhance your scripting workflows, we also cover advanced techniques to script complex algorithms.

Grasshopper 3D

What is Grasshopper and Why is it a good fit for me?

Grasshopper is a visual programming software and scripting environment embedded inside Rhino 6. Unlike scripting languages, Grasshopper requires no knowledge of programming or scripting or syntax rules, but still allows designers to build form generators from the simple to the awe-inspiring. The user interface is highly intuitive and quite practical when it comes to translating design into a process.

Grasshopper is primarily used to build generative algorithms that include numeric, textual, audio-visual and haptic input methods. Advanced uses of Grasshopper include parametric modelling for structural engineering, parametric modelling for architecture and fabrication, lighting performance analysis for eco-friendly architecture and building energy consumption. The program also serves as a launchpad environment for various plugins that deal with design, analysis and fabrication.

Moreover, Grasshopper has a very healthy and ever-growing online community of open source definitions. The community is constantly uploading new plugins as DLC that is updated almost on a weekly basis. So basically you have a sandbox-design kit to design design-tools.

What will i Learn in this certification course?

Apart from providing the basic and advanced skill training in visual programming, the course will upgrade your design skills to be able to design with algorithms to solve complex design problems. The course will be a game changer in your design output from concept to details.

The course will also expose you to Avant-garde design practices, techniques and workflows which you can easily incorporate in your existing design workflow. The course seeks to propagate the digital, computational, process-driven design strategies which will certainly prove to be a game changer in your career.

Why is it Important to know 3D Modeling?

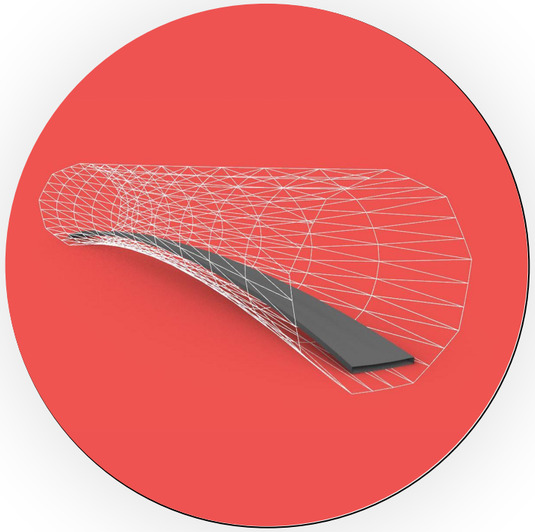
3D Modeling is a a backbone of the all the design industries. You might be an Architect, a freelance graphic designer, a 3D visualizer or an App developer, modeling your ideas digitally is as important for you as typing up a paragraph or taking a picture.

As the design community is a frontrunner of an open source market, digitization of ideas becomes one of the crucial aspects of this entire movement. 3D Modeling is also a core skill now that needs to be developed as AI approaches and is so keen on digitization.

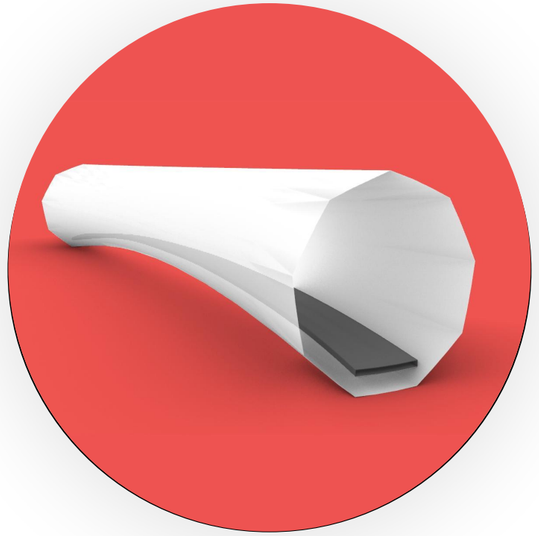
Why to take this Webinar Course?

This webinar course is a well researched step by step understanding of a 3d modeling software that is wide, intuitive and advanced . Rhino 6 has a plethora of tutorials, tips, tricks and hacks available online, but this is the Rhino 6 Masterclass you always wanted.

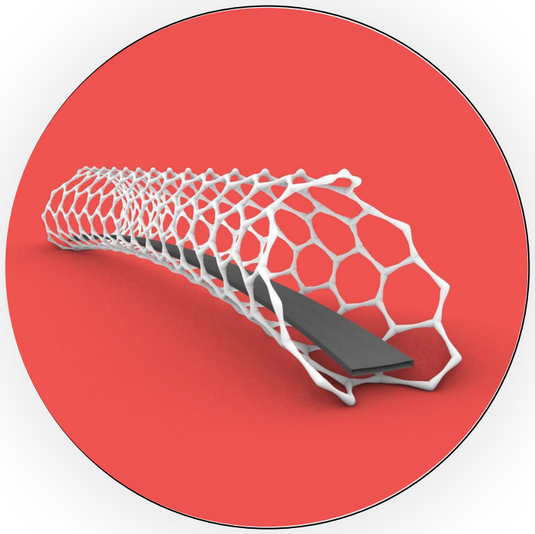
The Parametric Certification webinar Course has a well researched course structure with appropriately paced course material, filled with exercises that carry tangible outcomes which can suit beginners and advanced users alike.



Chapter 1



Chapter 2



Chapter 3

Chapter 4

1 CHAPTER

Visual Programming

A Brief introduction with the understanding of the UI, default presets, opening, saving and exporting data, with an elaborate tutorial on referencing geometry from Rhino 6, while learning to design a canopy.

2 CHAPTER

Design by Data

Understanding the core of Grasshopper for data management and manipulation – Lists, Trees, Sets, Clusters, while streamlining the design process for a canopy design to fit any given context.

3 CHAPTER

Design by Process

Translating Rhino 6 tools into Grasshopper terminology and definitions. Understanding the math behind the concept of Voronoi and learning how not to overuse it. Generating conditional based algorithms such as the attractor – repeller,

4 CHAPTER

Permutable Morphologies

Understanding the basics concept of Kangaroo which is the native physics simulations plugin for Grasshopper and performing mesh-relaxation exercises in it, while understanding other widely used plugins such as Weaverbird, Lunchbox, etc. to tap into the permutable power of Grasshopper.

COURSE TIMINGS

21-08

OCT - NOV

SESSION 1

TIMINGS

1100 – 1230 (CET)
1600 – 1730 (CET)

CH - 1 | Visual Programming

CH -2 | Design by Data

21 OCT

SESSION 1

SESSION 2

TIMINGS

1100 – 1230 (CET)
1600 – 1730 (CET)

CH - 3 | Design by Process

23 OCT

SESSION 2

SESSION 3

TIMINGS

1100 – 1230 (CET)
1600 – 1730 (CET)

CH - 4 | Permutable Morphologies

25 OCT

SESSION 3

Angad Warang

Designer | Researcher | Design researcher | Research designer

Based in Spain and shuttling between India and the Netherlands, he is an architect who specialises in Computational Design and Digital Fabrication. He graduated with BArch from VNIT, Nagpur, India in 2012 and completed MS Arch in Biodigital Architecture from UIC, Barcelona, Spain. He is currently pursuing a PhD in Computational Design titled ‘Architecture of Computational Ecosystems’. He also works as a Research Assistant in the Institute for Biodigital Architecture and Genetics, ESARQ, UIC, Barcelona.

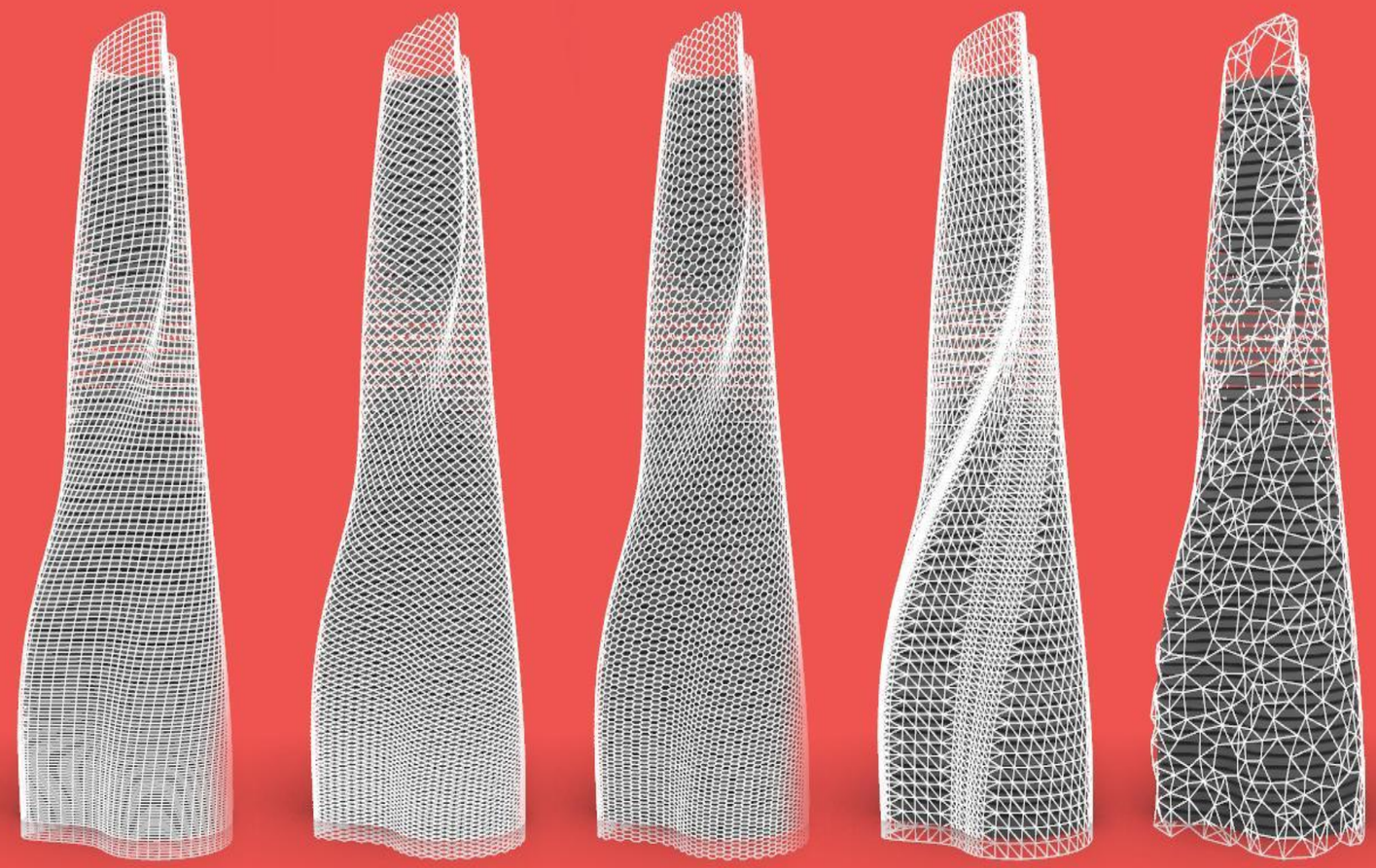
Angad teaches Computational Design and Digital Fabrication as an Associate Professor at the Biodigital Architecture Master in UIC, Barcelona. He also teaches in several Architecture and Design institutes in India as a visiting faculty. He is constantly conducting workshops in India, Spain and the Netherlands as a contribution to his research.

He is also the co-founder and co-owner of undesign[labs], a research, design and education consultancy that specialises in digital fabrication.

https://www.linkedin.com/in/angad-warang-7658b1117/

Infinitatus!

Morphology is a study of form that relies on understanding the plasticity of a material and then being able to manipulate it for a desired purpose. Permutable morphologies is exploiting the documentation or the 'design recipe' to generate permutations and combinations of different sequences to generate a plethora of iterations as discreet design solutions. Using Grasshopper as the environment, the challenge focuses on generating several façade options for a predesigned Architecture and predetermined design criteria



The Challenge:

- Select a pre-modeled building. If you have finished the **VERO VETO**! Challenge from Computable Morphologies – Rhino Masterclass, you can use the finished model at step 6.
- Generate an algorithm that makes an exoskeleton around this building. The algorithm should make at least 15 options for the exoskeleton considering permutations on 6 design criteria that are specified in detail on the next page.
- Needless to say, the solution should be designed in Rhino 6 and programmed in Grasshopper. Make sure you iterate as many options as possible

Submission Format:

- At least 01 feature render that could help visualize the entire design.
- Process documentation of all 15 options as demonstrated during the webinar.

26 OCT

Webinar Challenge Release Date

08 NOV

Submission deadline for Webinar Challenge

1: Aesthetic Value

One Criteria to consider could be the Iconic Appearance of the Exoskeletal structure. It could be derived from the overall form of the original building. It could enhance some aspects of the design while concealing others

2: Structural Stability

Another Criteria for the structure could be its stability. It's essential to perform any structural calculations. Although, the Exoskeleton should be able to support its self weight, while holding the weight of the original building.

3: Functional Integrity

The Exoskeleton could also exhibit some possibilities of ancillary functions for its inhabitants. A balcony, a bridge or a sky-park could also be encouraged as a criteria for the overall structure.

4: Climate Sensibility

One of the most dominant criteria could be the Exoskeleton's contribution towards a sustainable architecture. Apart from optimizing heat gain and harvesting rain water, it could also harness energy.

5: View Optimization

While fulfilling all the above criteria, the Exoskeleton shouldn't forget that it holds people within. The structure should have a harmonious configuration of openings oriented towards pleasant directions.

6: Buildability

Finally, the Exoskeleton should be buildable both in terms of available technology and resources. This criteria will be the determinant of all pragmatic and practical aspects of the structure.

Each Webinar session will be **1.5 Hours long with live QnA's.** The Webinar will take place on **ZOHO Webinar Platform.** Participants will be able to ask questions by commenting on the videos, this gives Webinars a more interactive community environment.

All videos will be available, including the live streams, for your viewing as much as you like, even after the live stream as ended. This means you can enjoy the videos even if you are not available for the live stream session.

All Webinars will be conducted in **English** and **there is no previous experience of the topics required.**

FAQ

Q. Who can take part in the Webinars?

A. Webinars are open for all, even if you are a school student or you are working professional. You are welcome here to be a part of the webinars.

Q. What is the purpose of the Webinars?

A. Webinars are intended to improve the skill-based experiences among designers or budding designers.

Q. How do I ensure that I will be learning new skills in these Webinars?

A. Webinars are intended to improve the skill-based experiences among designers or budding designers. You can refer to the brief for the detailed structure of the webinar before registering.

Q. How many people would be participating in the webinar?

A. A maximum of 50 people are allowed for 1 batch of the webinar. In order to maintain the right balance between students and mentors, we limit the ratio of 1:50 between Mentor to Student.

Q. What if i miss a session of webinar?

A. Webinar lectures will be available for offline viewing after all the webinar sessions have ended. Students can revisit the sessions as many times as they want after they have done the registration.

Q. What would be duration of One Webinar Session?

A. One Webinar Session would last between 60-90 mins depending on the course structure and the mentor..

Q. Who can take part in the Webinars?

A. Webinars are open for all, even if you are a school student or you are working professional. You are welcome here to be a part of the webinars.

Q. How long would be one Webinar course?

A. One Webinar course would last as long as 7 days. There will be three sessions one day each, giving enough time for participants to complete their webinar challenge

Q. Who reserve the rights of the outcome of the competition/workshop?

A. Organizers/Mentor/Participants all reserve the rights of the content created or produced during/after the workshop. For details read our terms of service

The winning entry will receive a Certificate of Merit, based on the evaluation done by the mentor on the challenge given after the webinar has concluded. All the other participants will receive an E-Certificate for participation.

AWARDS

ABOUT

Uni Classrooms serves as a part of UNI in the realm of **Online Learning and portfolio building oriented design exercises.** Classrooms provide an online interactive cultural environment Online Webinars tend to bridge the Knowledge gap between students and the industry requirements. Learn what industry requires and be on the top of the requirement charts for the companies. Also get an edge from your peers.It intends to give opportunity to young students to explore their design skills in refreshing problems similar to their curriculum. The online lectures followed by related design challenges helps to cement the skills learnt in the webinar. Classroom Competitions embarks on the idea of creating fundamental design challenges to enhance the learning experience and education. It is a research initiative dedicated to providing opportunities for students of design schools from all domains to explore the ideas that go beyond the restrictions of usual architectural discourse.

Queries: support@uni.xyz
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Discover FAQ's about this competition on our help forum here: http://help.uni.xyz/

Towards creating **new design paradigm.**