Institute for advanced architecture of Catalonia

COMPUTATIONAL DESIGN // ALGORITHMIC EMERGENCE

FOREST LIGHTS

PAMELA INEGBEDION

Forest Lights

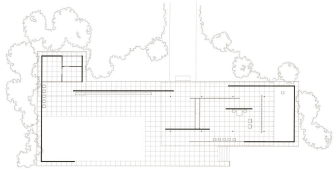
Computational Design // Algorithmic Emergence



Iaac TUTORS: RODRIGO AGUIRRE, MOHAMAD ELATAB
ASSISTANT: IVAN MARCHUK, OANA TAUT

Site

Originally known as the German pavilion, the Mies van der Rohe is considered the display of architecture modern movement to the world. Mies considered his building a place of tranquility and escape.



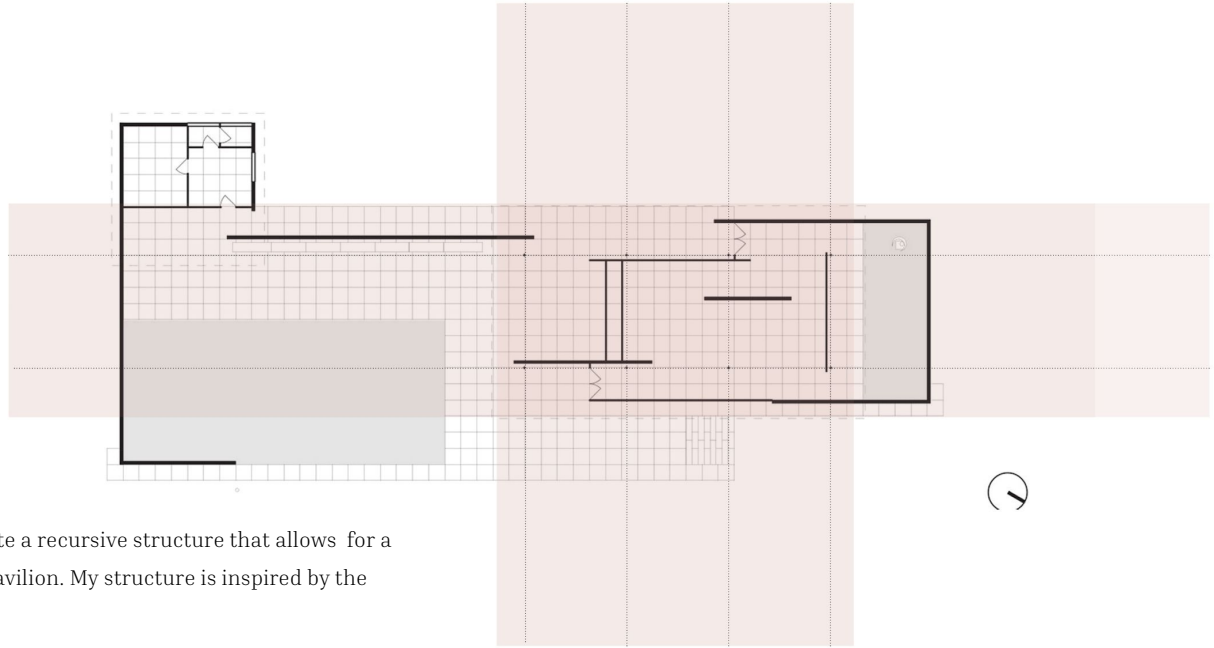


Design Operation

Cruciform Column Grid System

- Connective Strategy
- Linearity

Columns are positioned to connect the pavilion while facing all views in strategically enclosed locations.

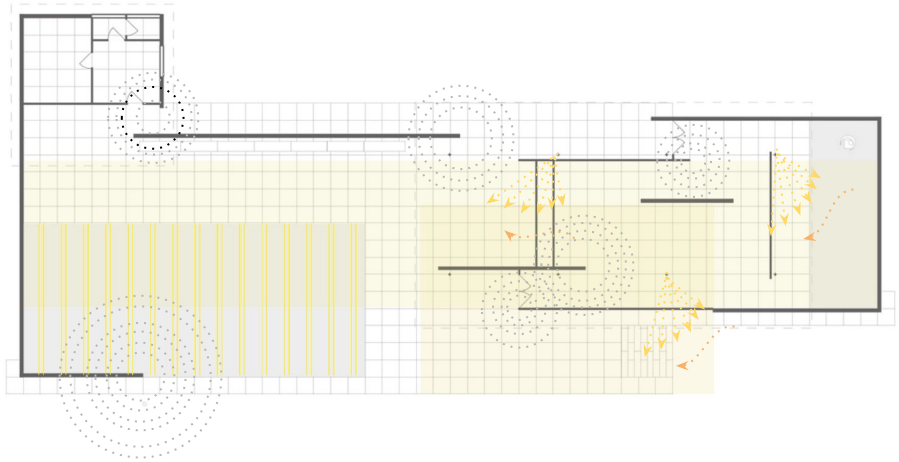


My aim is to use this points to create a recursive structure that allows for a forest-like experience within the pavilion. My structure is inspired by the mushroom, Forest Lights.

Design Operation

SUN PATH & STRUCTURE

Structure grows along sun path which is similar to how Nature takes over contained spaces.



REFLECTIVITY

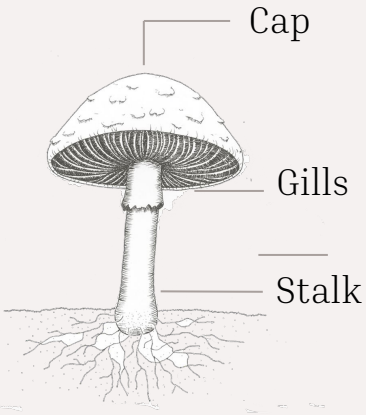
Light & shadow effect allow for enclosure and immersion which is the aim of my structure

Concept



"Indoors and outdoors are no longer easily defined; they flow into each other."

P. Johnson, 1978



Fungi are everywhere, in the air, water, trees and our bodies.

My design concept, Forest Light Mushrooms

Mushrooms as organisms are a real life illustration of how nature heals itself by living symbiotically with its environment. Flowing into each other.

The reason for this particular kind of mushrooms is due to their bioluminescent qualities as this allows for self illumination and an immersive ambiance which is what I aim to achieve with my structure. Like the forest.

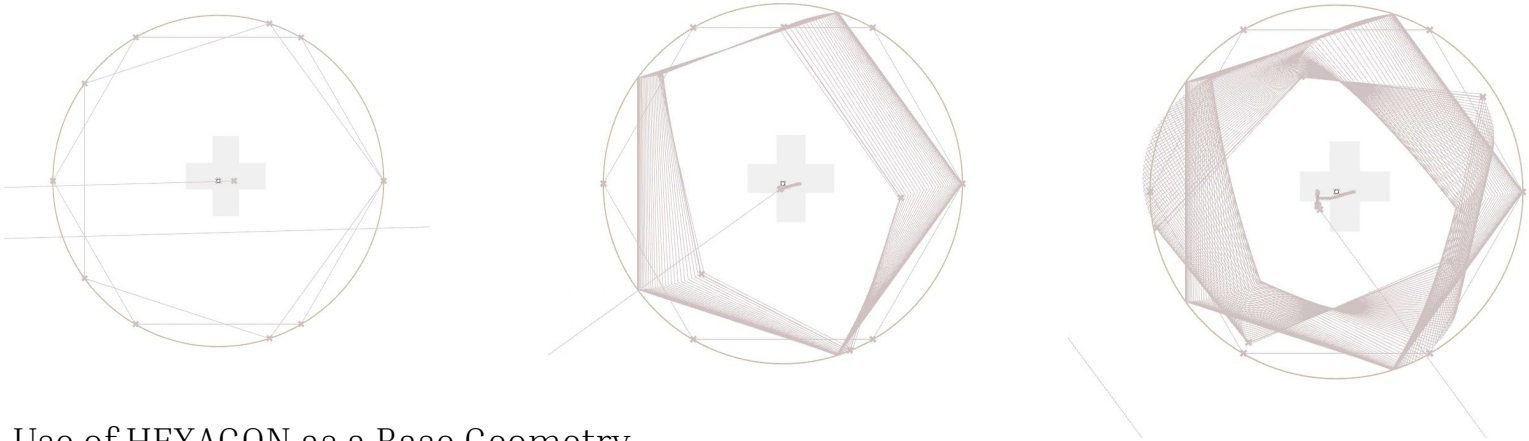
Pseudo-code

Point (Columns)

Create curve and Evaluate

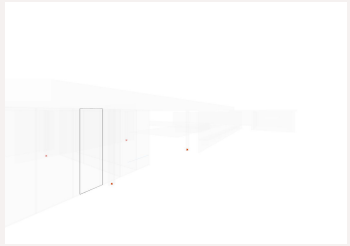
Connect points through polyline

Rotate geometry along sun path in Z-axis

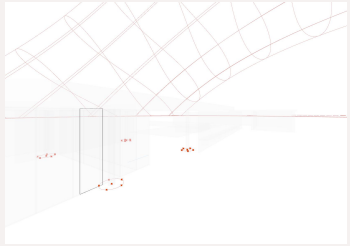


Use of HEXAGON as a Base Geometry that rotates along the sun path

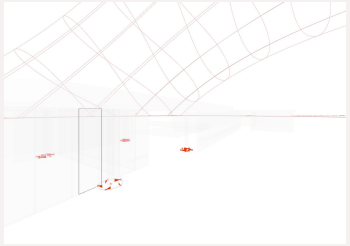
Code Development



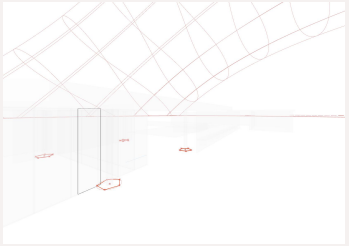
Pick points {Columns}



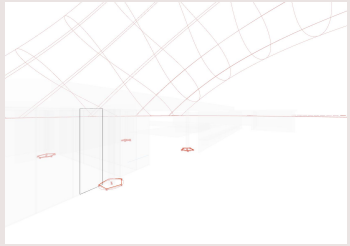
Connect to circle and divide curve



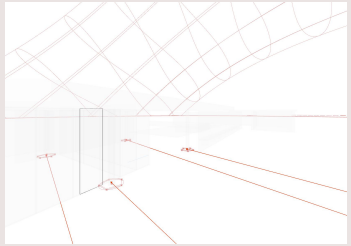
Rotate Vectors (Points) along its axis



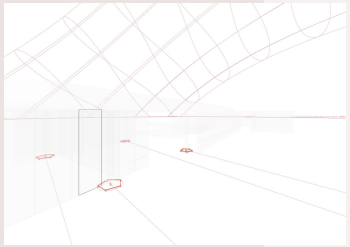
Connect points to form polyline



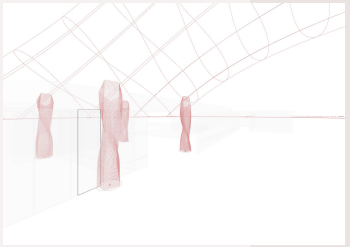
Move polyline to closest point



Find centre of polylines and connect to sunpath



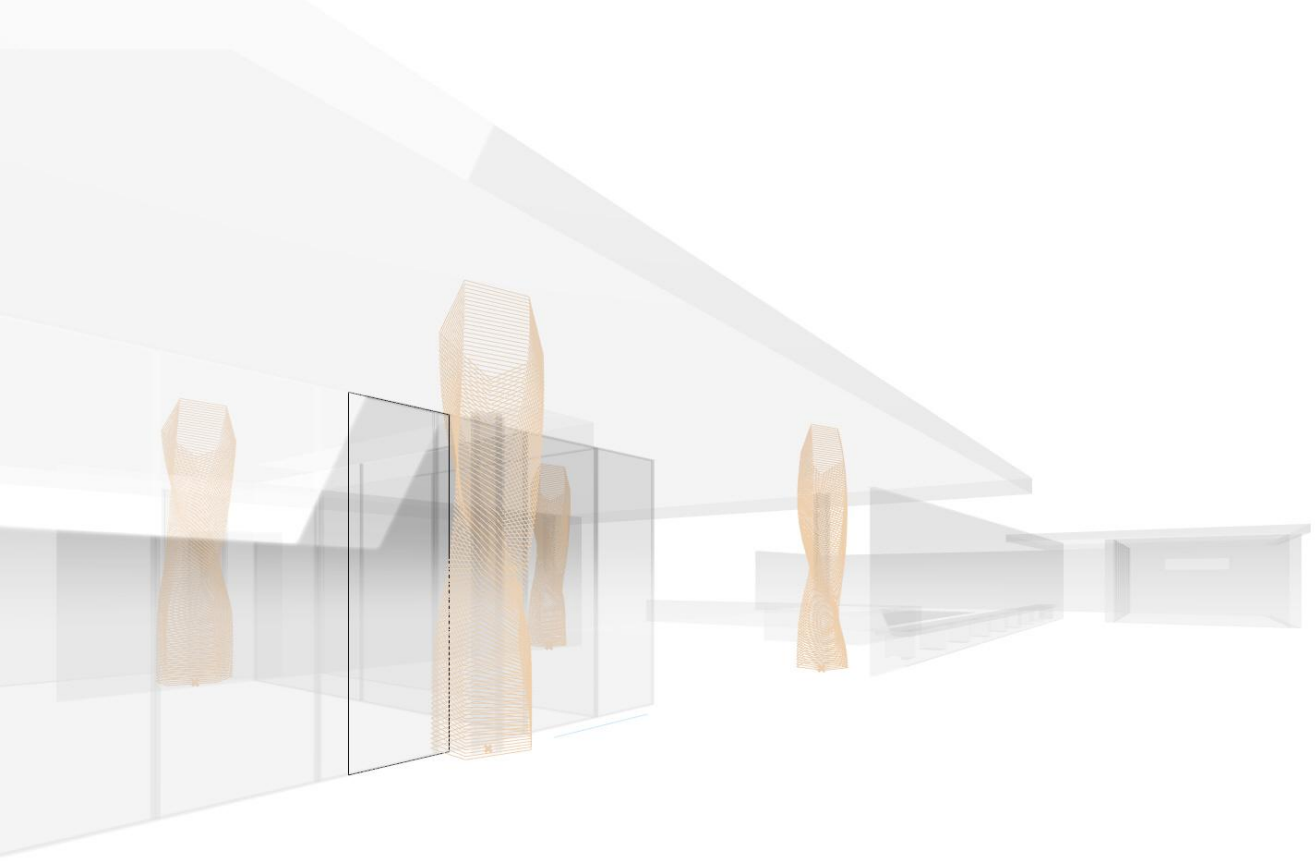
Orient plane and Loop



Create growth along sun path

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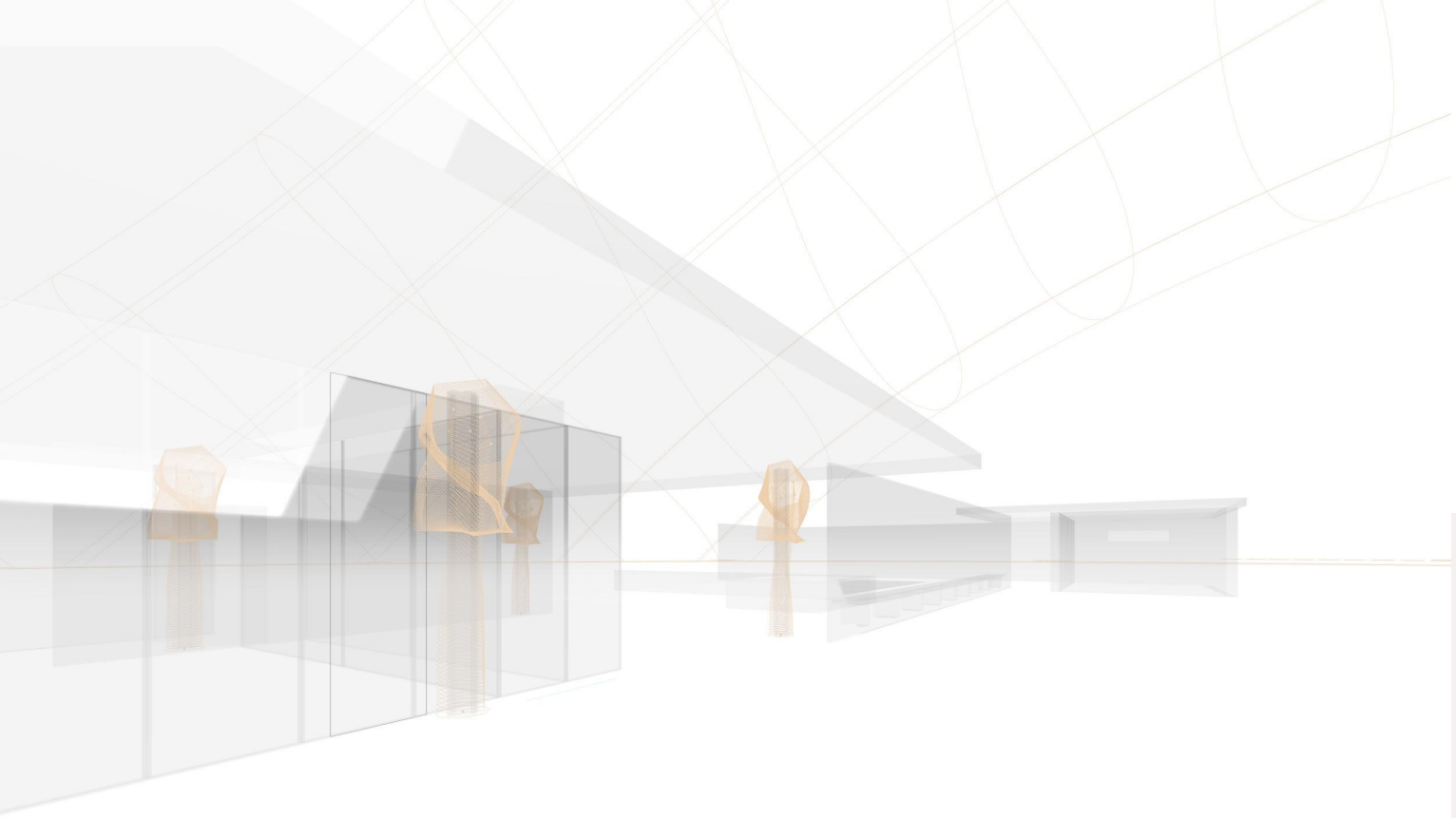
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Stalk

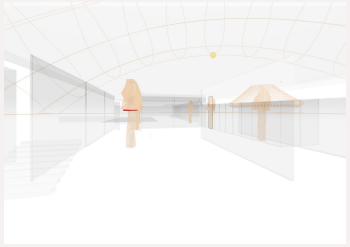
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Gills

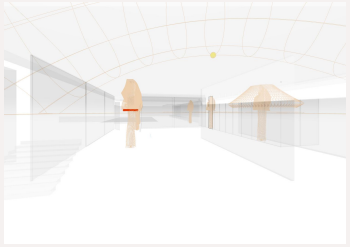


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Code Development



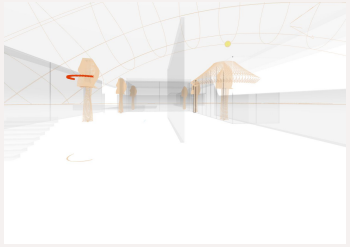
Pick centre point of inner structure and connect to arc



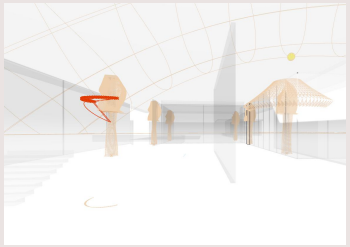
Divide Curve



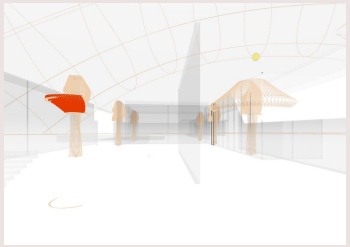
Connect points through polyline and explode



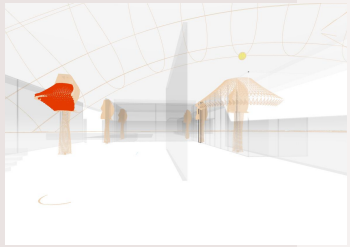
Connect points to form polyline



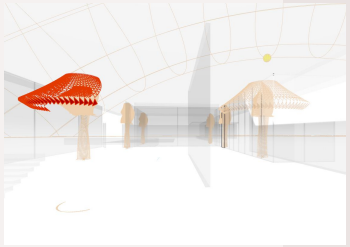
Shift points



Mesh

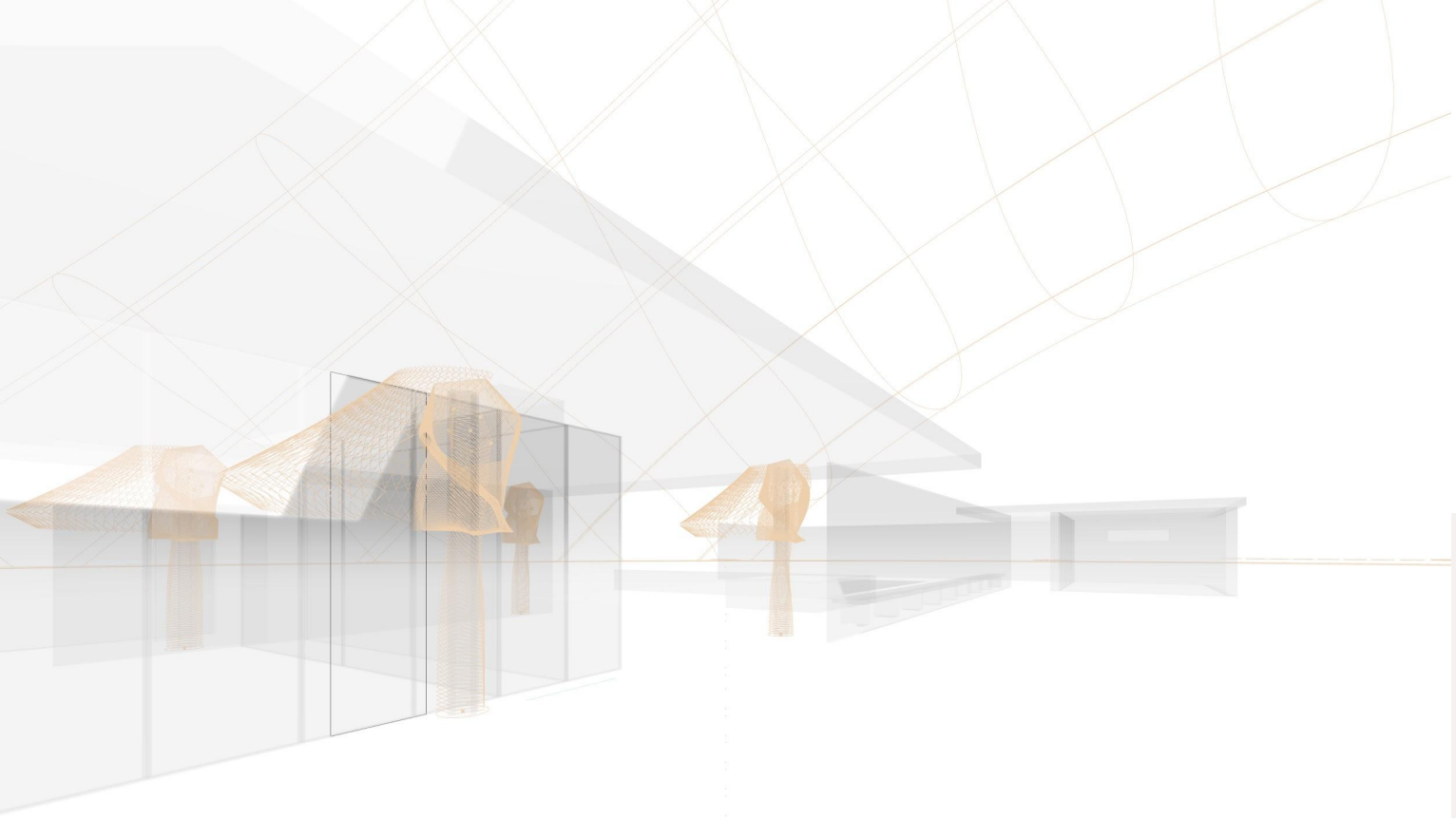


Mirror



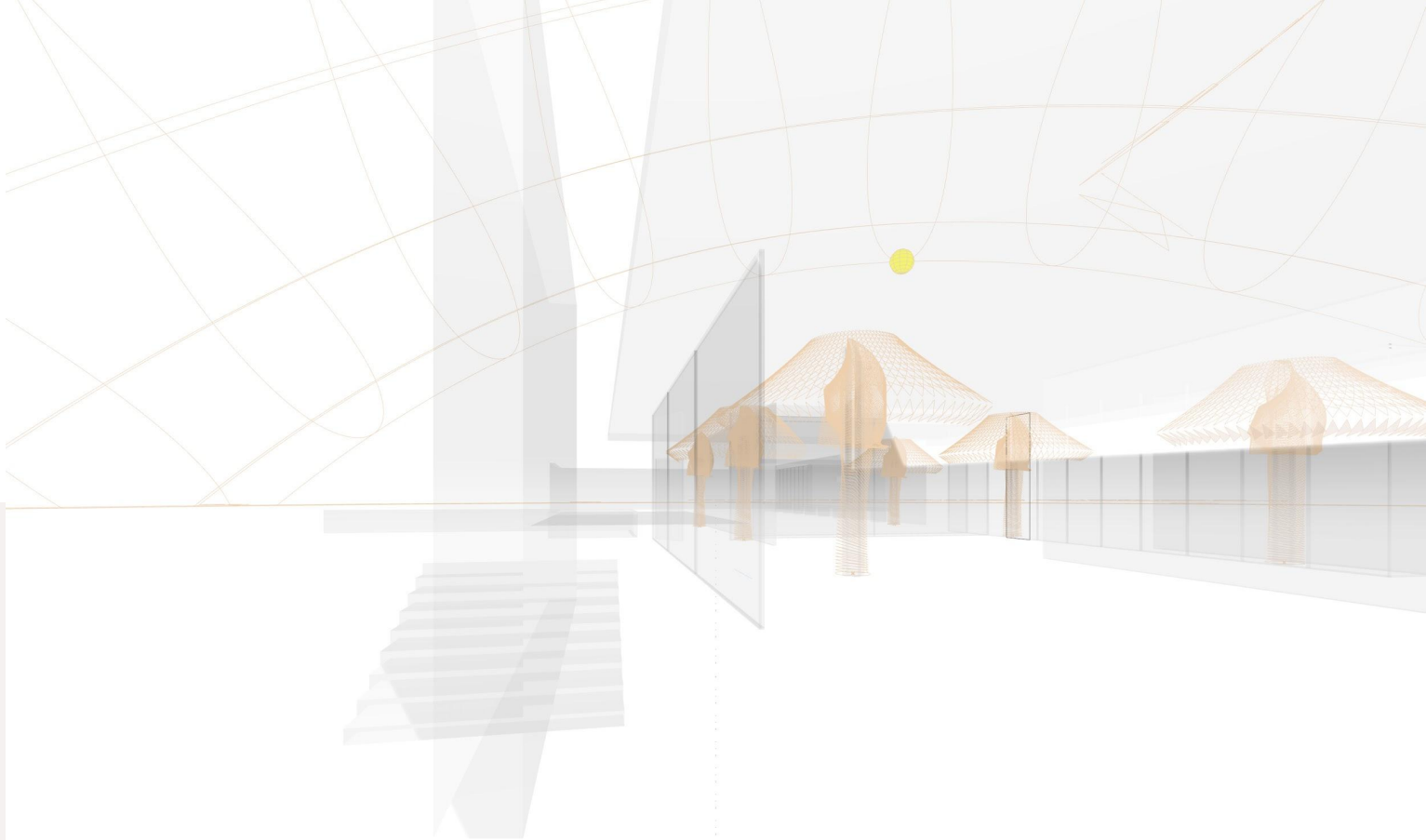
Create growth along sun path

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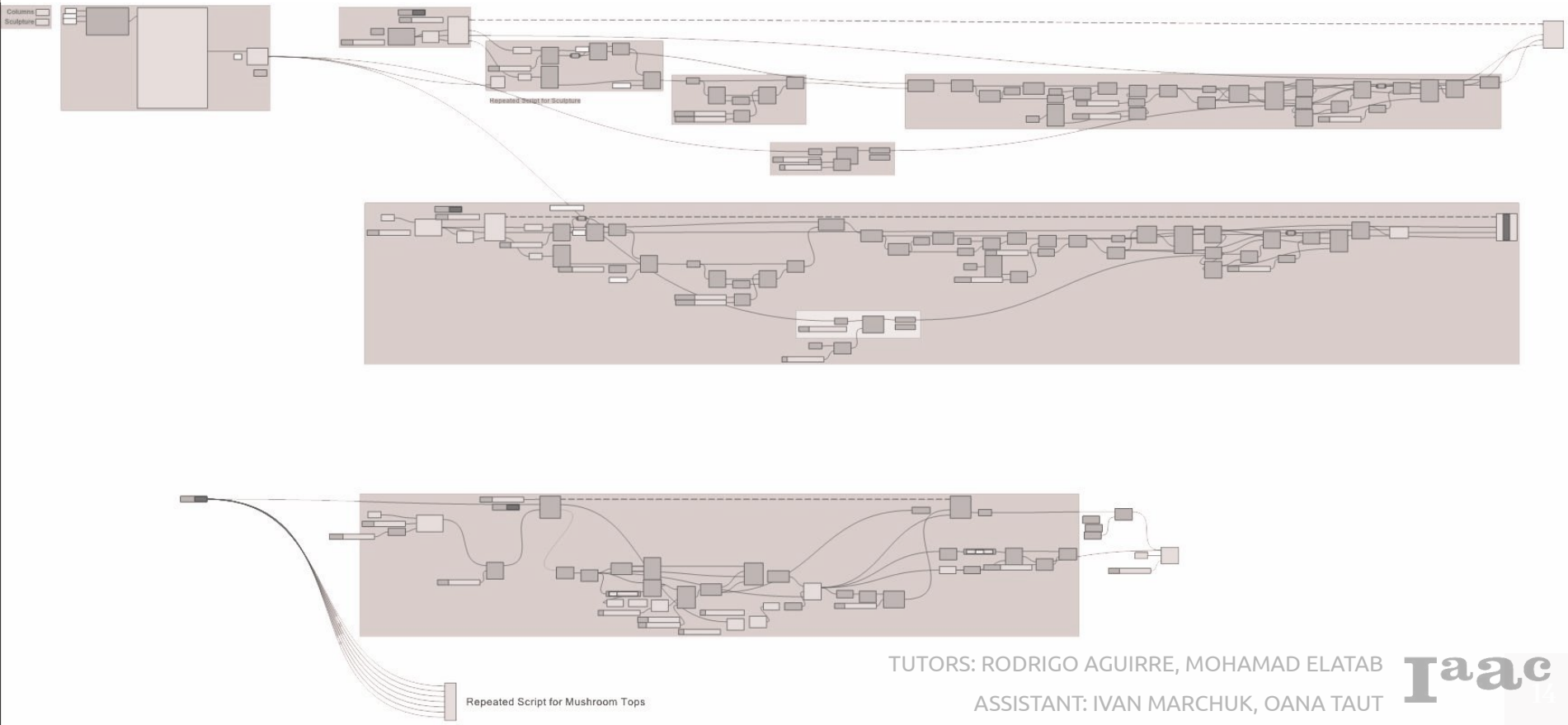
Cap

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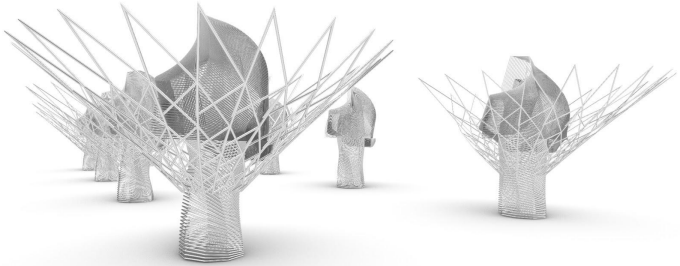
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Script

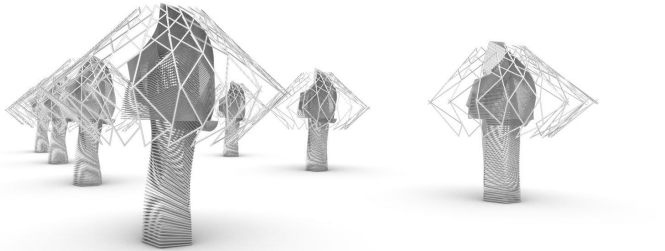


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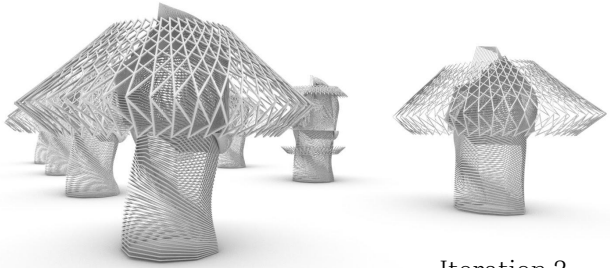
Iterations



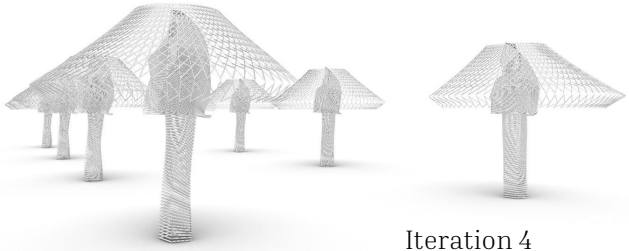
Iteration 1



Iteration 2



Iteration 3



Iteration 4

Iteration 1



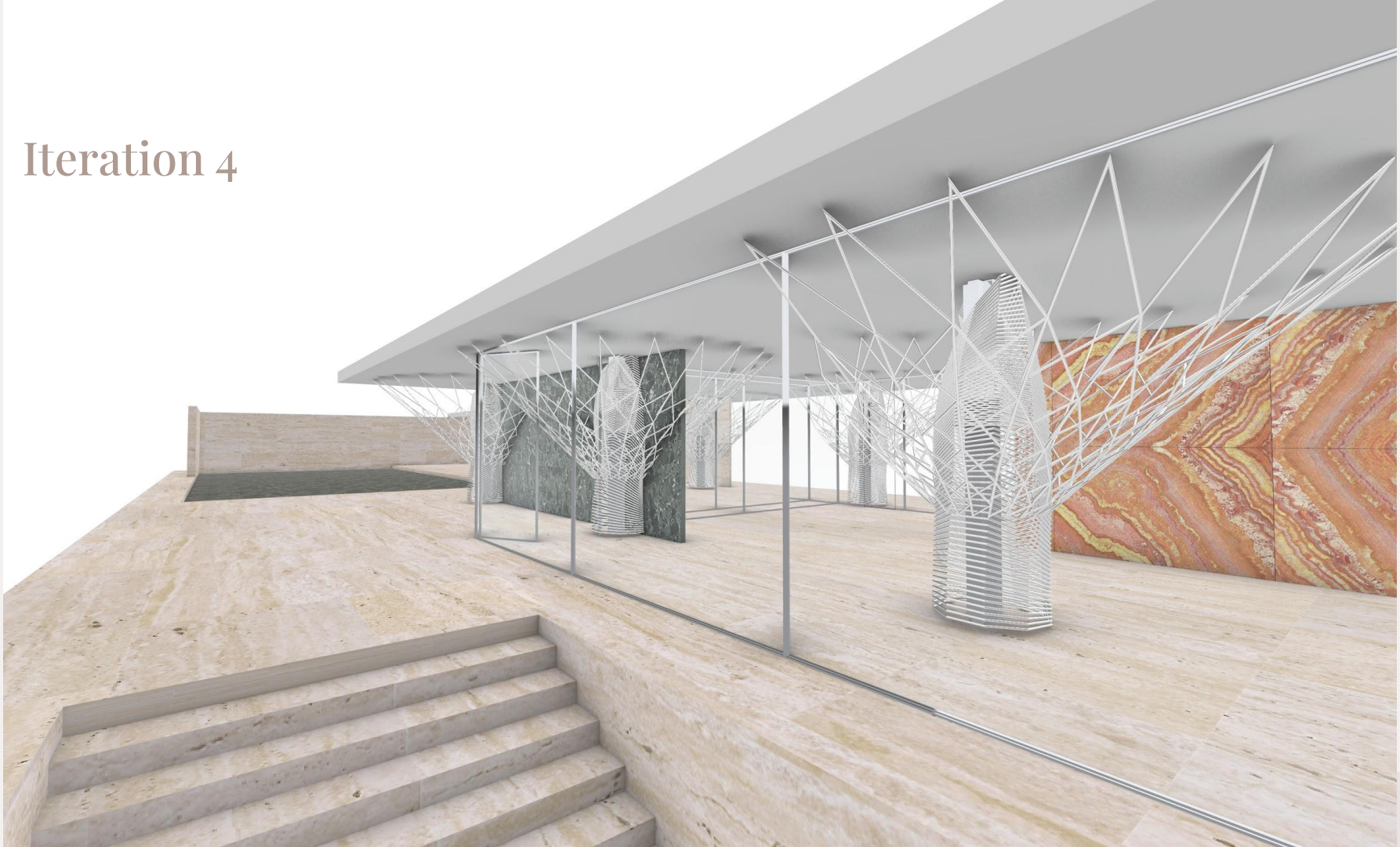
Iteration 2



Iteration 3



Iteration 4



Iteration 5






LUMION
PRO STUDENT



References

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