Genetic Optimisation

THE TWISTED WALL

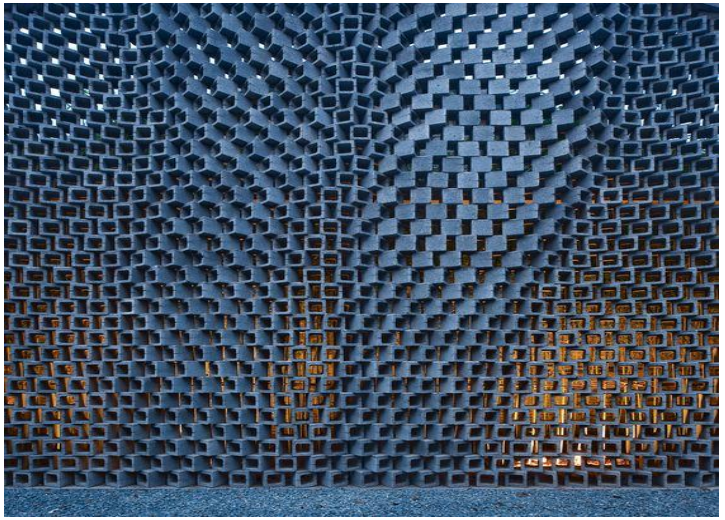
TUTORS : **RODRIGO AGUIRRE**

ASSISTANTS: **ASHKAN FOROUGHI, IVAN MARCHUK**

STUDENT : **BHARATH LAKSHMESH**



Faculty of Architecture at HKU and supported by Sino Group, the 'Ceramic Constellation Pavilion'



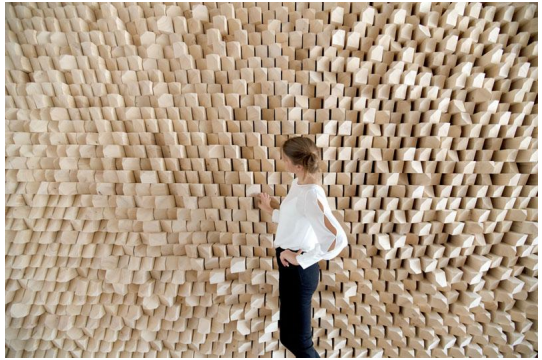
Archi Union Architects Inc



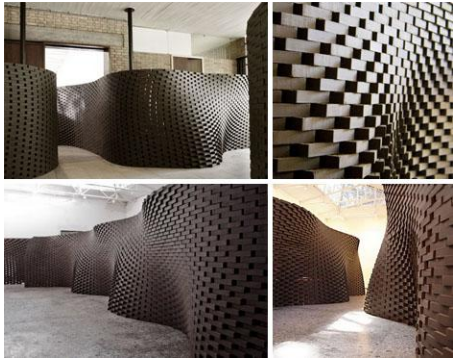
Gallery of Winery Gantenbein / Gramazio & Kohler + Bearth & Deplazes Architekten



ICD Workshop / University of Sydney, Sydney, Australia /Robotic Sewing of Elastically Bent Plywood



Gramazio Kohler Research, ETH Zurich



Gramazio Kohler Research, ETH Zurich

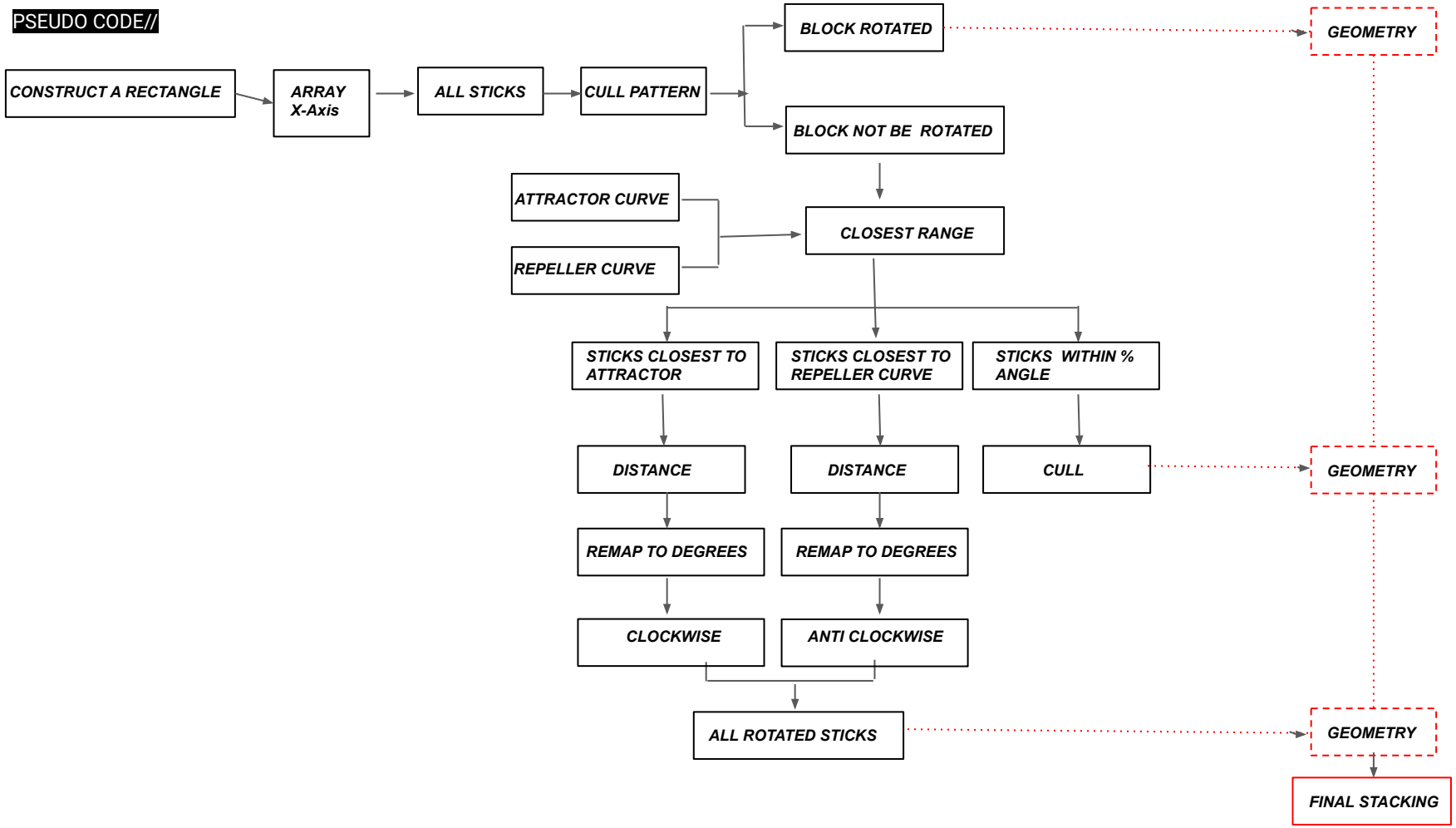
Continuous Facade:

Smooth ruled surfaces that allow geometrical continuity between horizontal and vertical position
Used to control natural light distribution in interior spaces (sunshades) and avoid direct harsh sunlight.

Three-Dimensional Screen Walls:

Outer-rotation warped blocks are assembled From Simple Associations To Complex network formations.
The thickness and density are controlled By the organizational pattern.

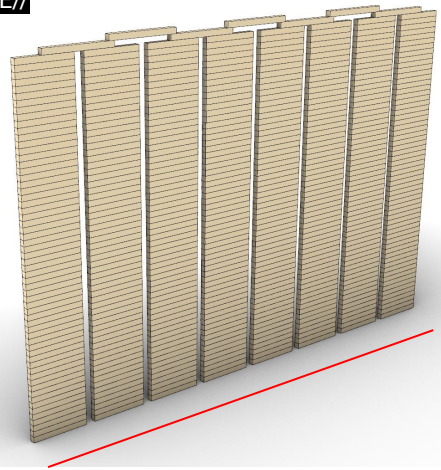
PSEUDO CODE//

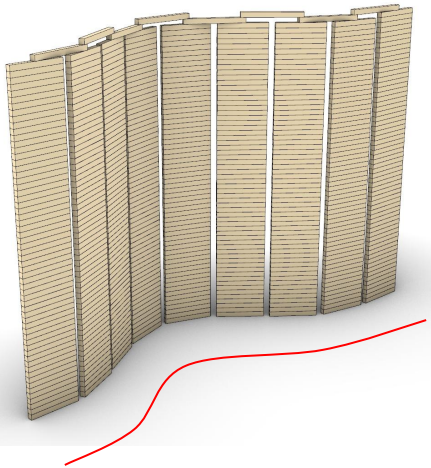


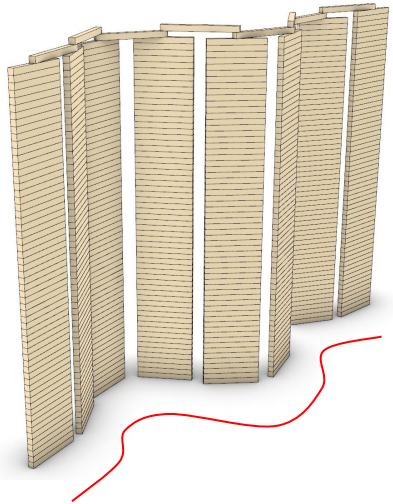
STUDENT : BHARATH LAKSHMESH

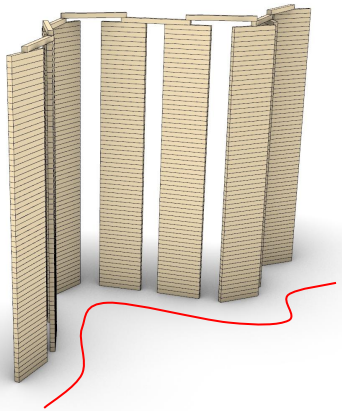
GENOME	SIMULATION	OPTIMIZATION (FITNESS)	DECISION MAKING
• TWIST ANGLE • ATTRACTOR POINT • AMPLITUDE	RADIATION ANALYSIS VIEW ANALYSIS (LADYBUG)	MINIMUM RADIATION MAXIMUM VIEW (GALAPAGOS)	PICKING OPTIMUM VARIATION FROM GENERATIONS

CHANGING THE BASE CURVE//

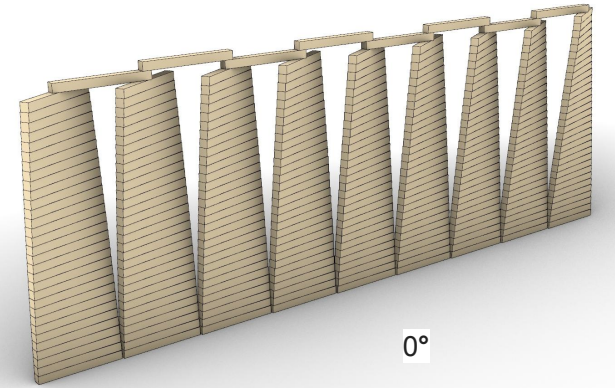




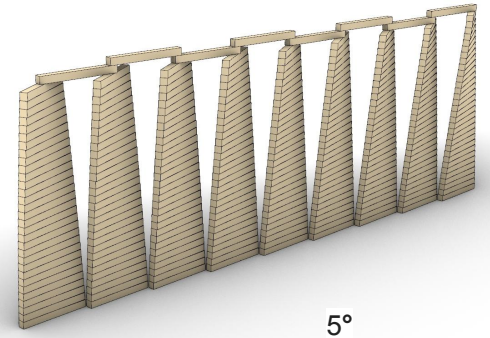




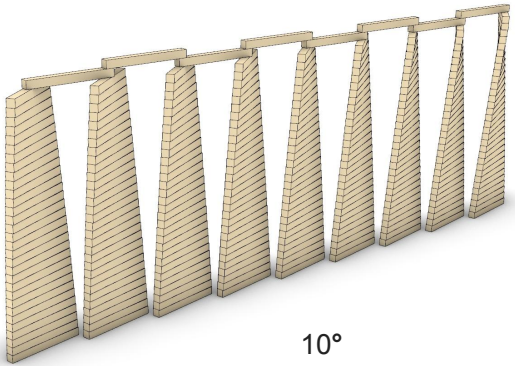
CHANGING THE ANGLE OF THE BASE LAYER//



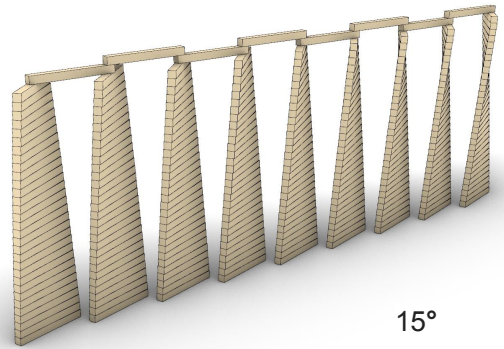
0°



5°

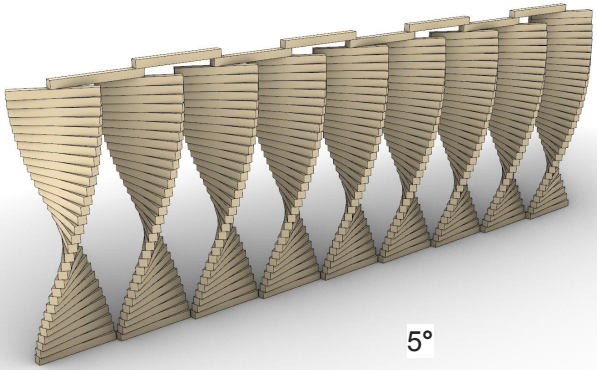


10°

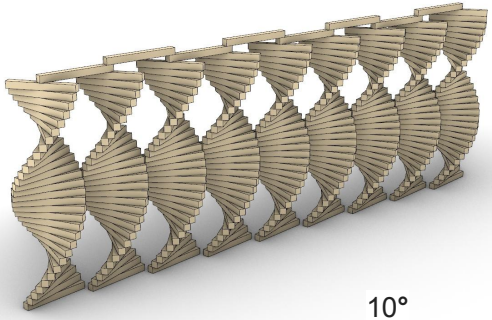


15°

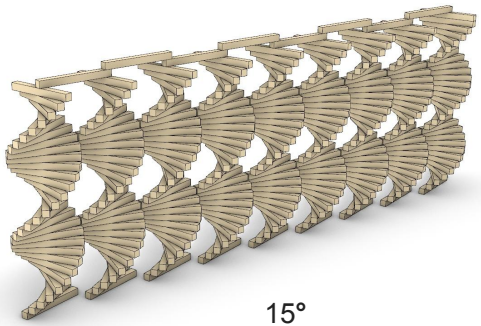
CHANGING THE ANGLE OF THE CONSECUTIVE LAYER//



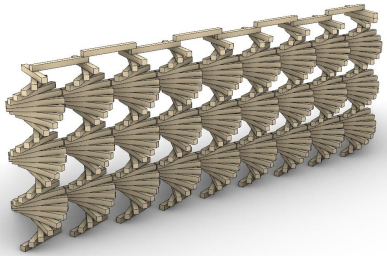
5°



10°

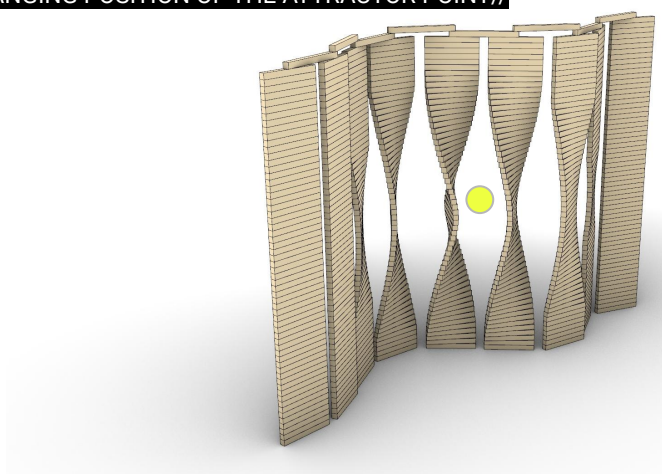


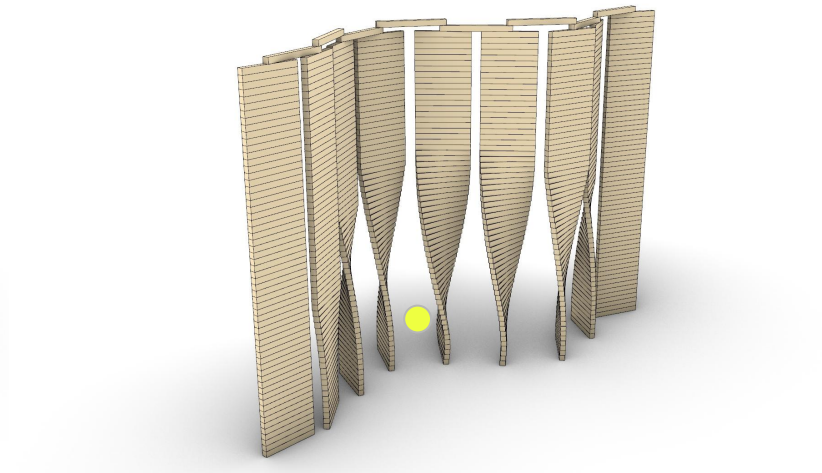
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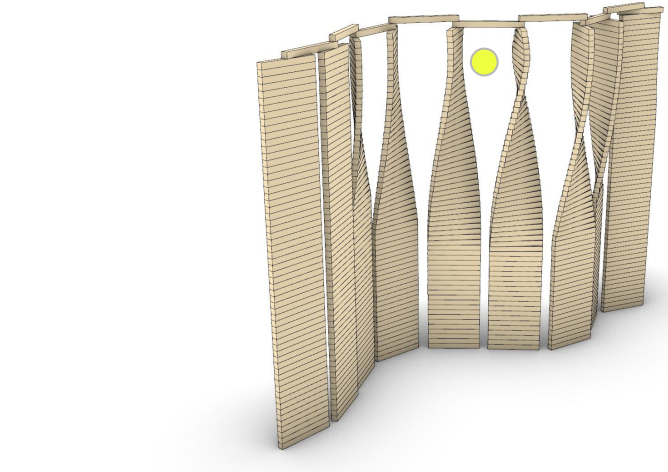


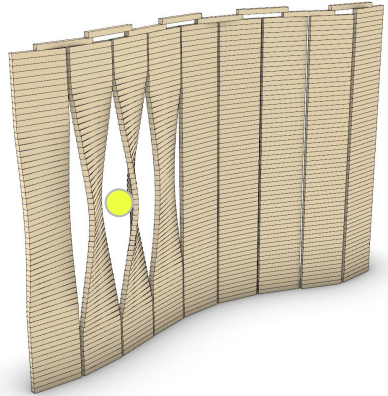
20°

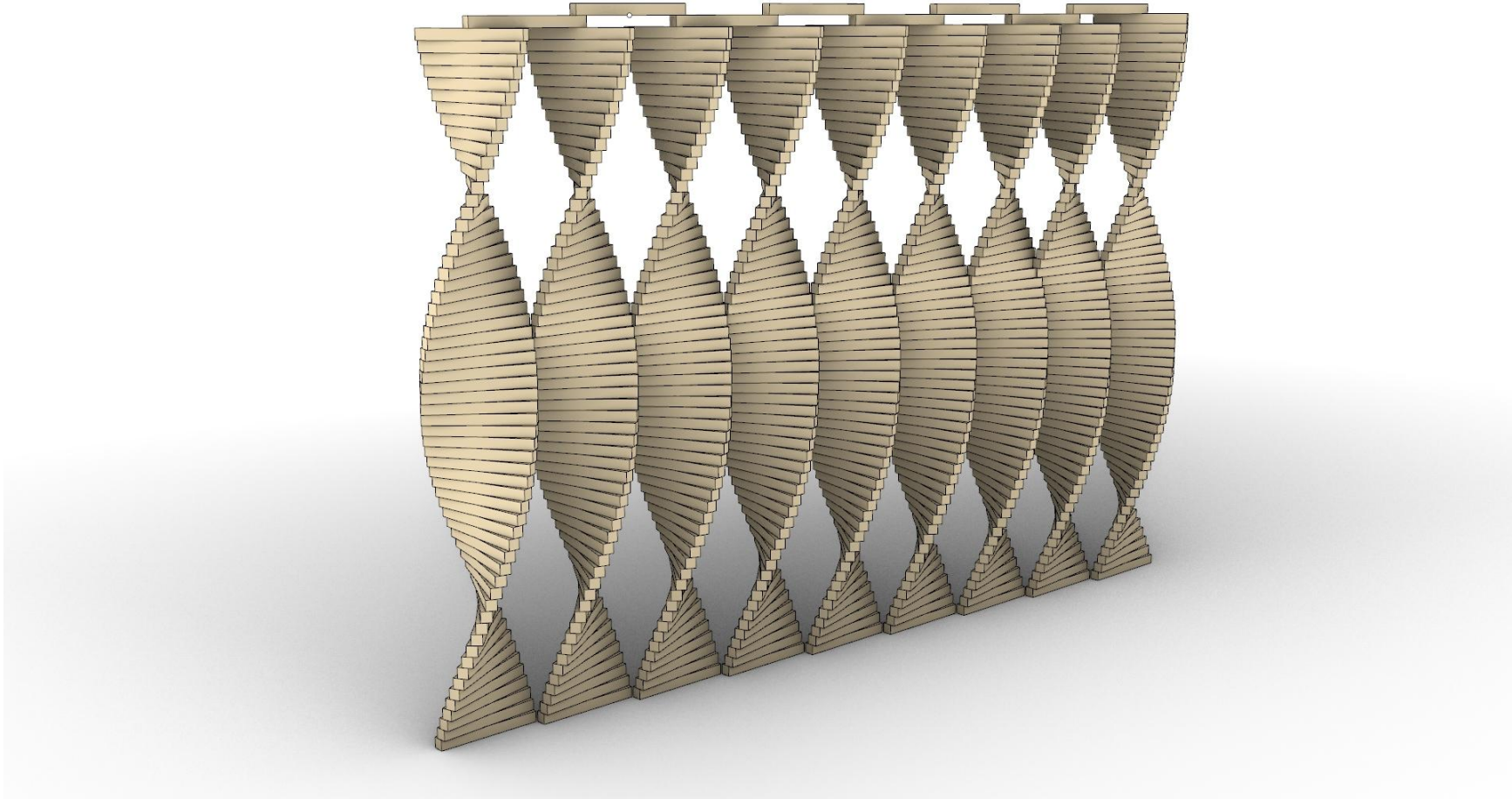
CHANGING POSITION OF THE ATTRACTOR POINT//

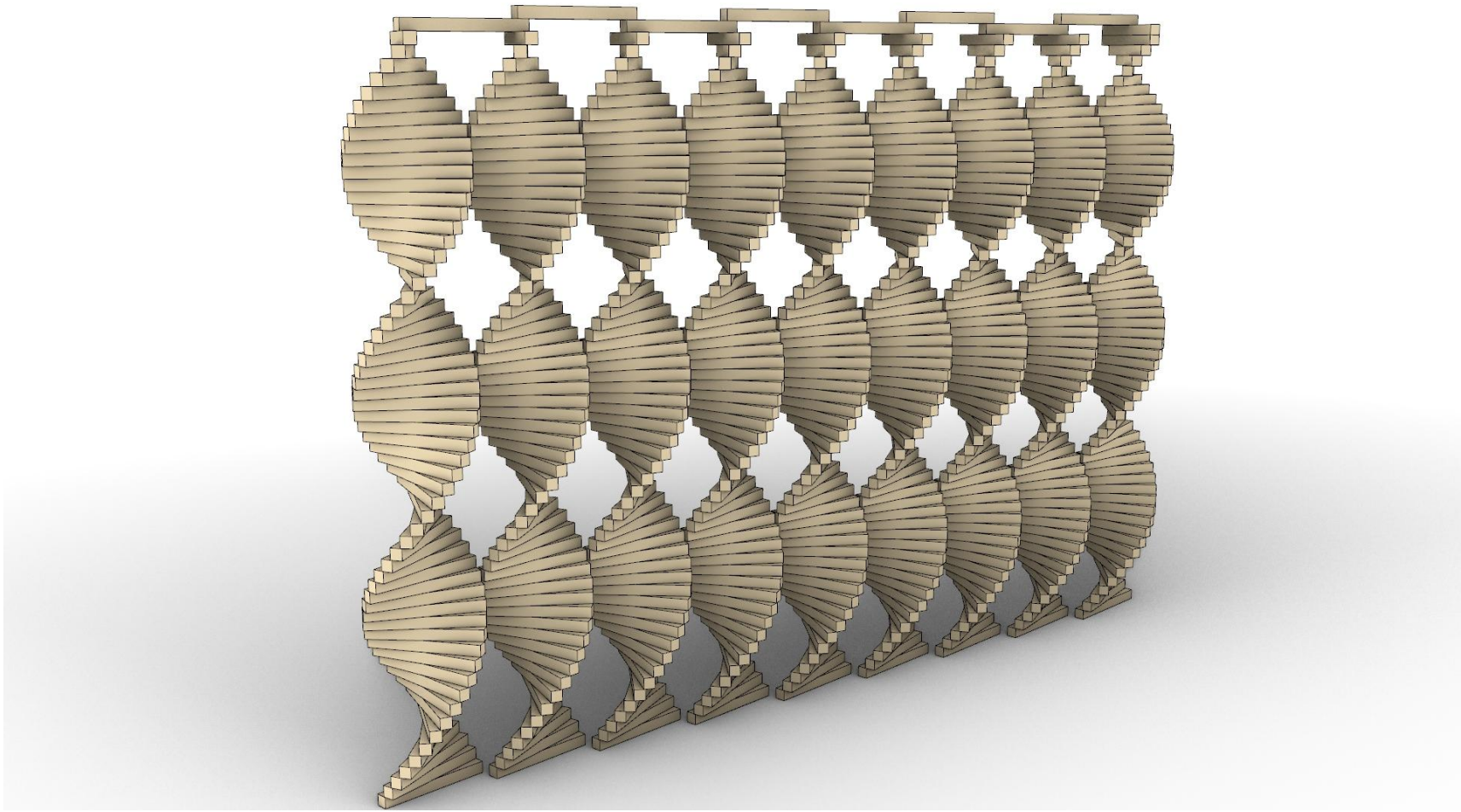




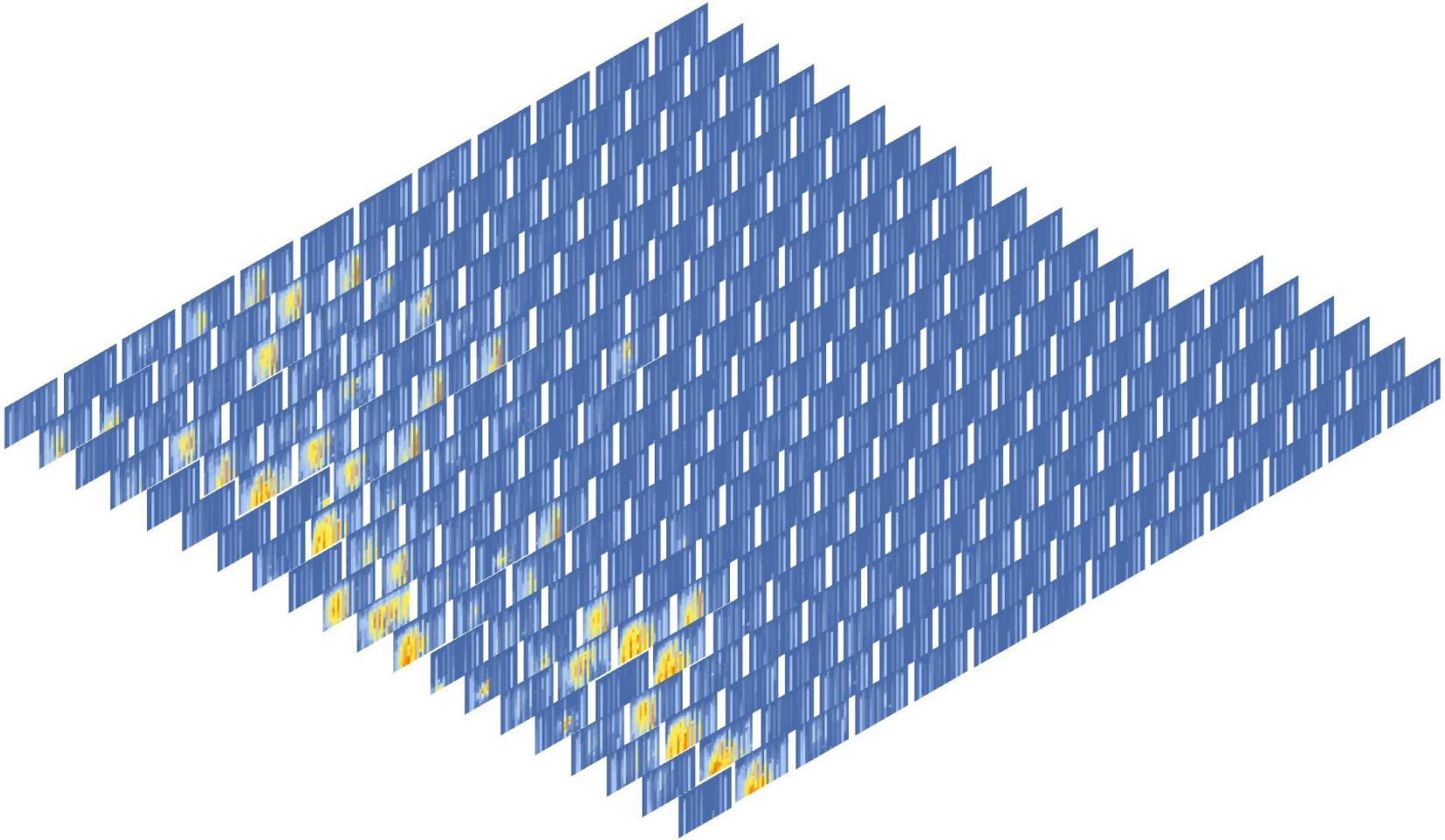






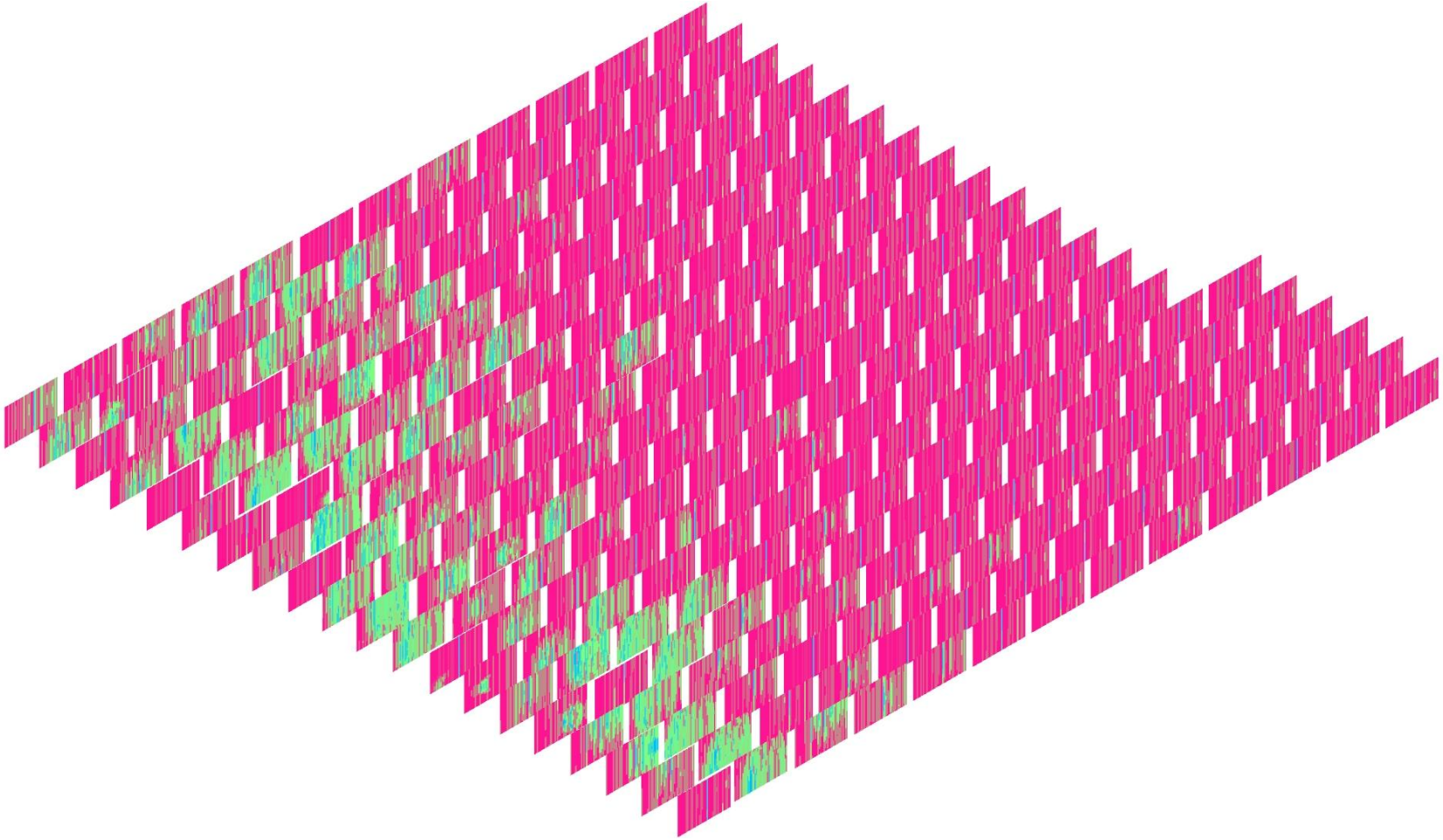


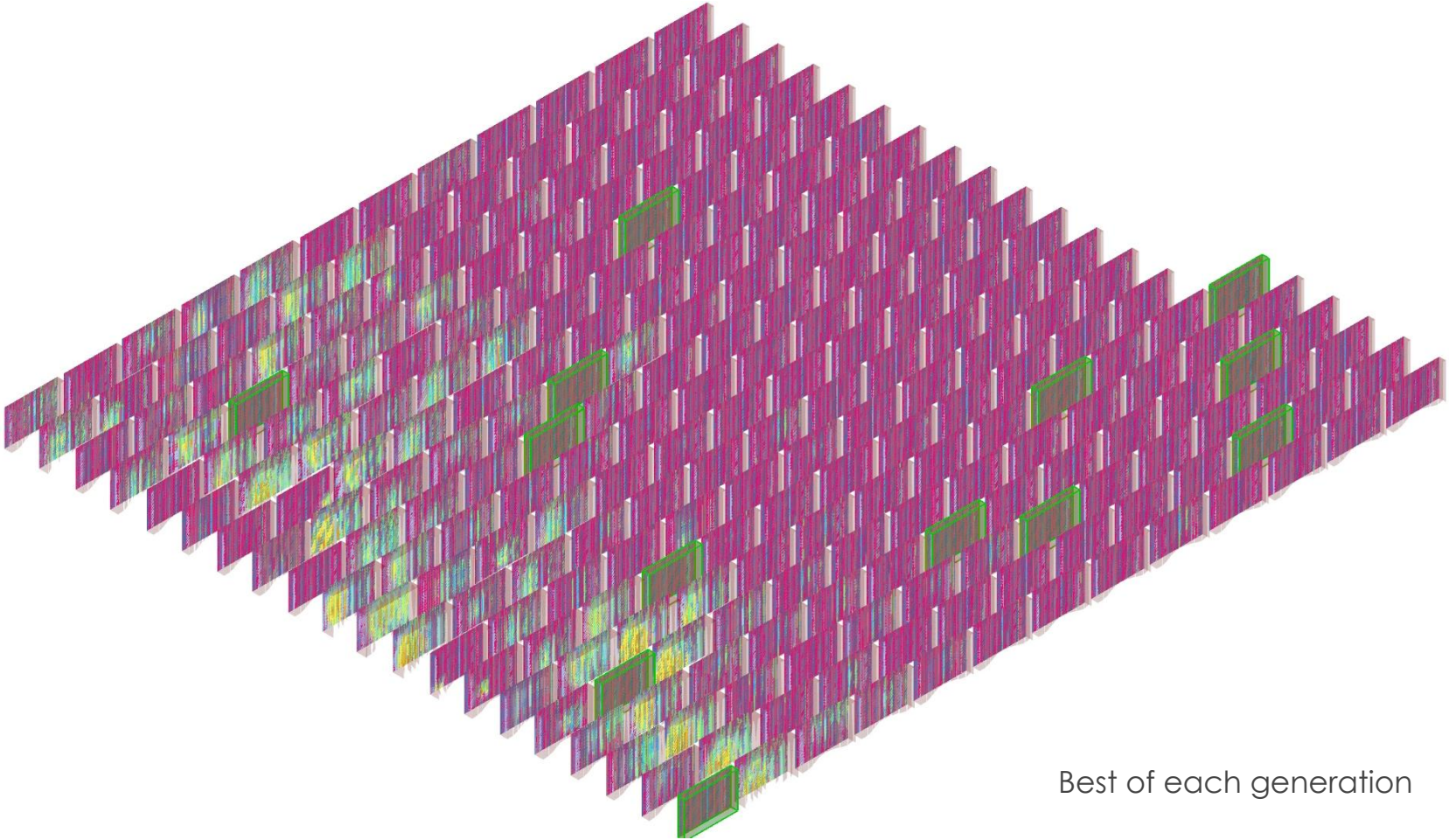
The project relies on evolutionary solving algorithms, in conjunction with Grasshopper's Ladybug to determine the best iteration of the facade with reduced solar radiation and maximum view.



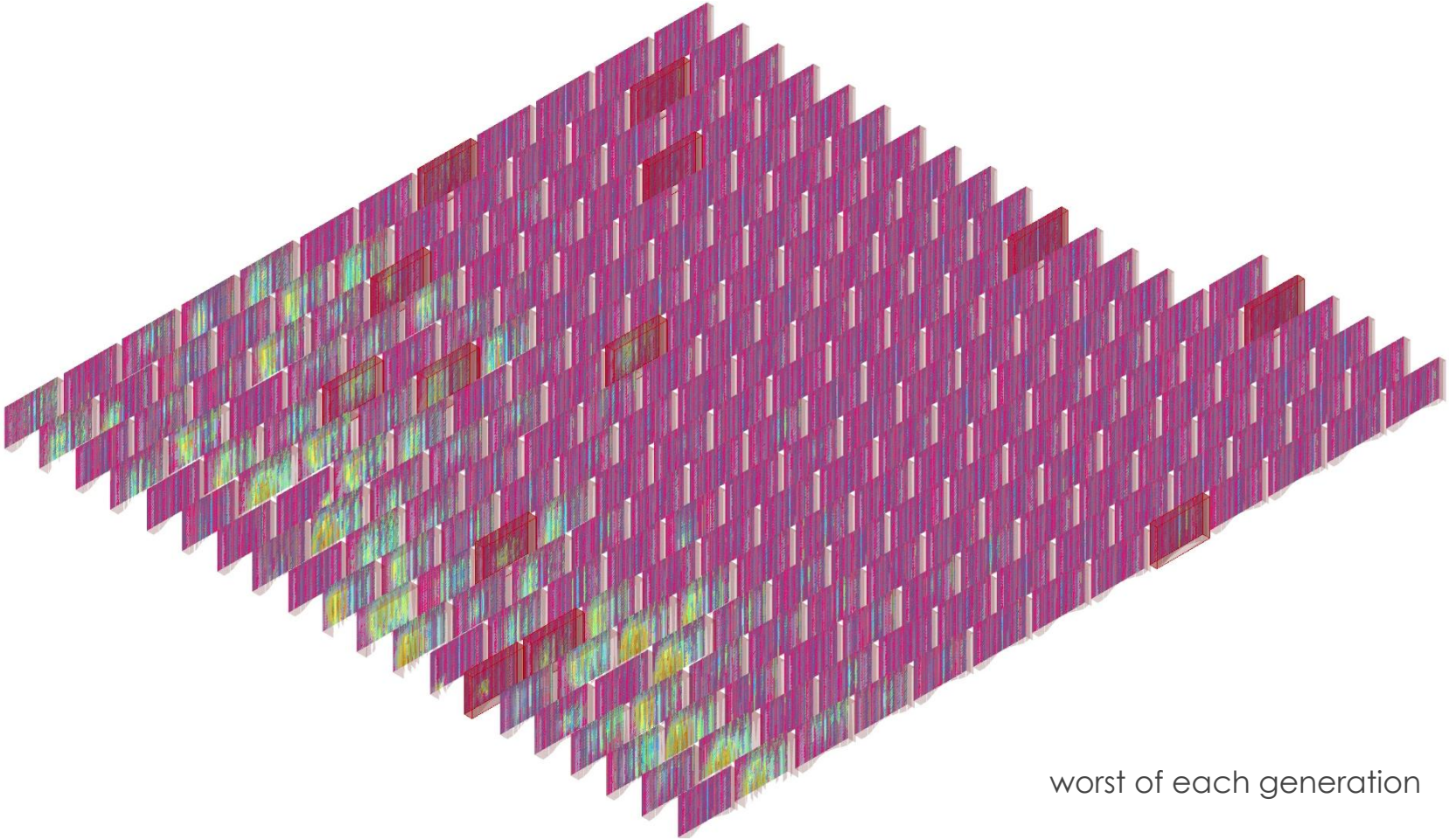
RADIATION ANALYSIS

STUDENT : **BHARATH LAKSHMESH**

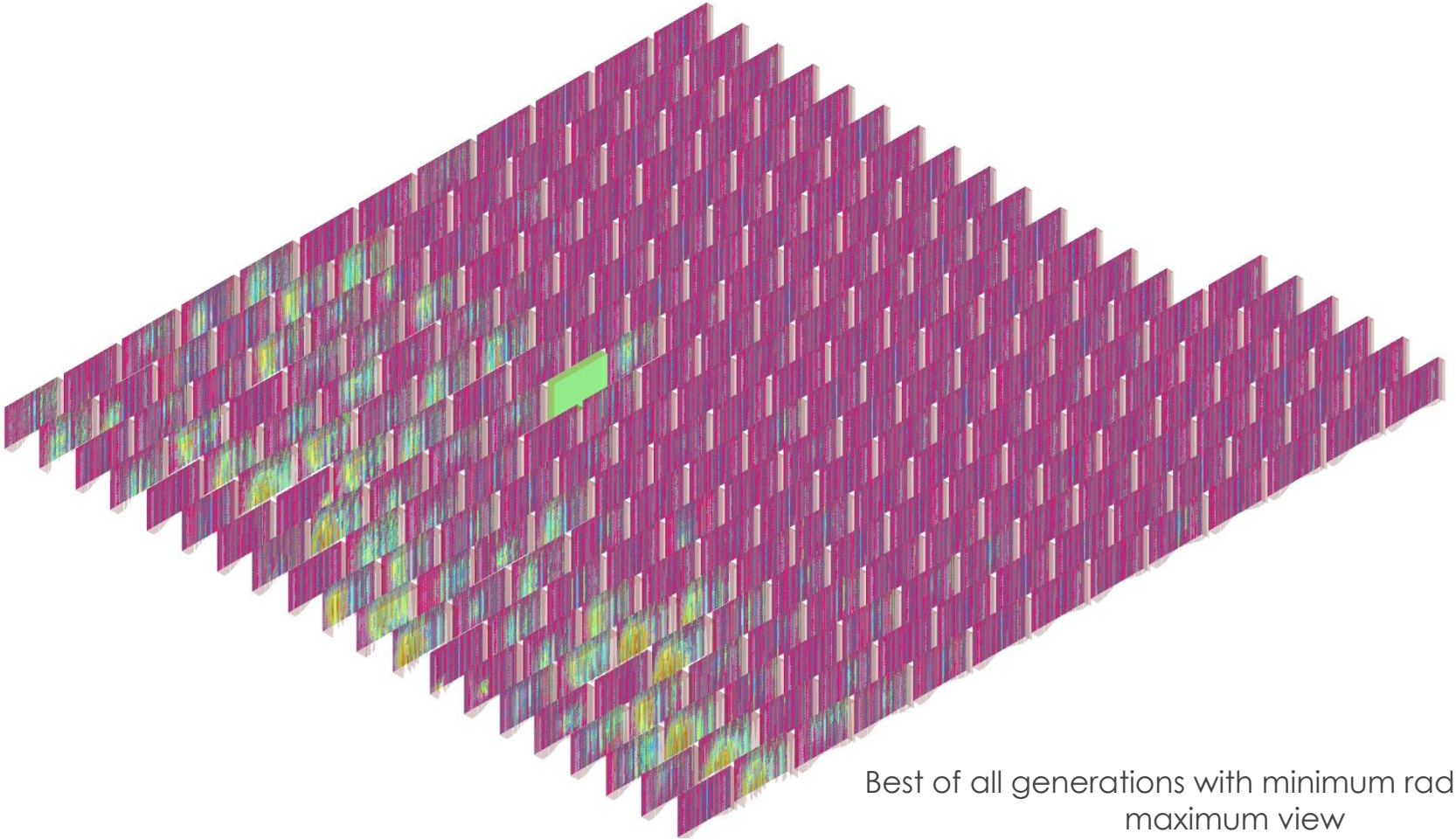

%
90.00<
85.50
81.00
76.50
72.00
67.50
63.00
58.50
54.00
49.50
<45.00



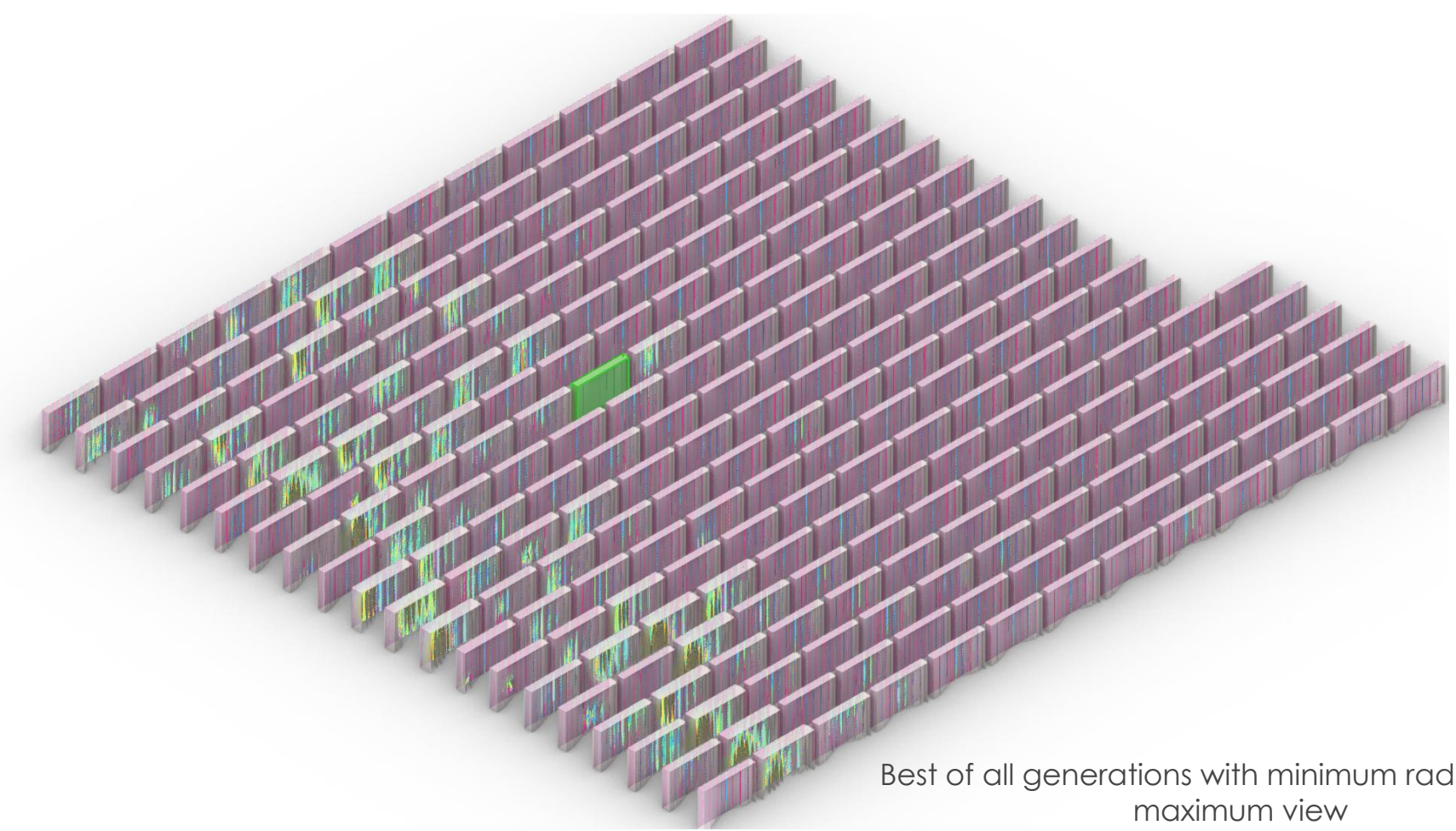
Best of each generation



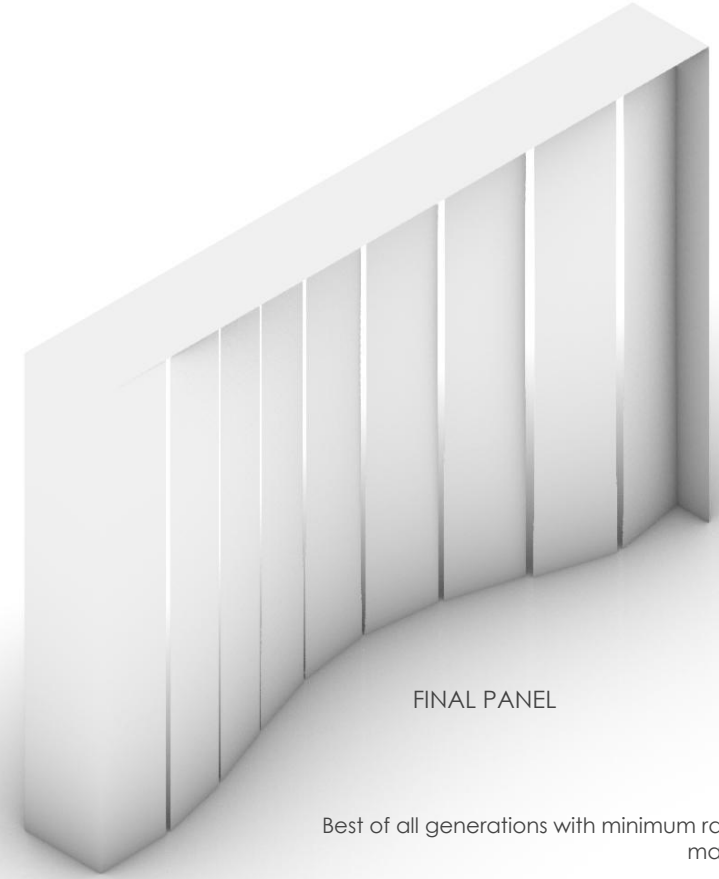
worst of each generation



Best of all generations with minimum radiation and maximum view

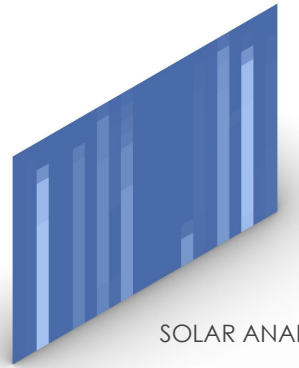


Best of all generations with minimum radiation and maximum view

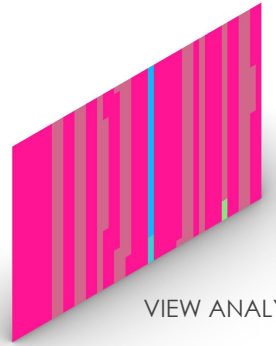


FINAL PANEL

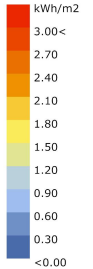
Best of all generations with minimum radiation and maximum view



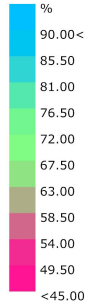
SOLAR ANALYSIS



VIEW ANALYSIS



Fitness Value : 43.37 u
Radiation : 0.73 kWh
view point : 47.15 %







Iaac | **RENDER**

STUDENT : **BHARATH LAKSHMESH**

