ARCHITECTURE

Mike Saad

NEW YORK INSTITUTE
OF TECHNOLOGY

Mike F. Saad

THE ARCHITECTURE OF ARCHITECECTURE

It is thought that an architect's concern is just to build. What is not known is that an architect's last concern is to build.
What is it meant by Architecture? How is Architecture present with the absence of building?How is Architecture present in every major?
Architecture thus, not only is concerned about building, but about the process of things.
Architecture is a system, a process of thinking, the mean but not the end.
'When i am working on a problem, I never think about beauty..... but when i have finished, if the solution is not beautiful, I know it is wrong' Buckminster Fuller
Architecture for Architects is then not just about design. Architecture is a way of thinking that wouldd give shape to the world in a meaningful way.

Work Experience

- Fall 2023/Spring 2024 — **Research Assistant| New York Institute of Technology| New York City**
  Conducted a Research project on metal forming techniques.
  Wrote G-codes through DFM and DFA, and executed them with KUKA Robot.
  Worked with Photogrammetry and Pointcloud data to gather information about the physical environment.
  Worked with Simulation, Optimization and Fabrication projects.
- Summer 2022-2023 — **Assistant Project Manager- BIM Architect| MAC| Las Vegas/ Lebanon**
  Coordinating with engineers and ensuring that there are no clashes between the different disciplines.
  Produced Architectural drawings, templates and families.
- Spring 2022 — **Project Architect| Leitmotiv Workshop| Lebanon**
  Led projects from design to execution using BIM software (Archicad-Revit)
  Site architect for a residential project, Supervised and Coordinated execution.
- Spring-Fall 2021 — **BIM Modeler- Site Architect| Zein Engineering| Lebanon**
  Supervised and directed the development of a landscape project.
  Managed execution drawings for a residential building and served as the site architect during its construction.
- Fall 2020 — **Contractor| BebwShebbek| Lebanon**
  Inspected, Operated and Supervised work, as a contractor on damaged houses for wood works, and collaborated with different contractors to get necessary work done.
- Spring 2019 — **Architect with EVO design| Sweden**
  Designed a Pop-up truck for LAVAZZA coffee brand.
  Conceptual approach, space optimization for maximum functionality.
  Generated 2D drawings, and 3D renders.

Education

- 2023-2024 — **New York Institute of Technology**
  M.S Architecture, Computational Technologies GPA:4.00
- 2015-2020 — **Notre Dame University (NDU**
  B.A of Architecture Cumulative GPA:3.36

Exhibition & Publications

- 2024 — M I M E S I S FORMA IMMAGINE by: Patrizia Catalano & Maurizio Barberis
- 2024 — Salone Del Mobile Exhibition. Milan, Italy
- 2024 — Dezeen: New York Institute of Technology spotlights seven fabrication and robotics projects 2024
- 2024 — Parametric Architecture: "Gaudi' NYC Skyscraper: Inhabiting the skyline"

Skills

- Earned skills — Rhinoceros, Grasshopper, Scripting in Rhinoceros and Grasshopper
  Python Scripting, Machine Learning
  Houdini, ArchiCAD, GIS, QGIS
  AutoCAD, Revit, 3dsMAX,Vray, Twinmotion
  Adobe Suit, MS office, Reality Capture, Unity 3D, Ulti maker-Cura

Languages

- Earned skills — Fluent in Arabic, French, English Knowledgeable in Spanish

Honors and activities

- Spring 2024 — Dean's Award for Excellence
  Wrote a book chapter in a soon to be published book
- Spring 2021 — Earned a certificate in computational Design using rhino Script from University of Michigan
- Winter 2021 — Participated in a competition tackling an Architecture of Disaster
- Spring 2020 — Took a LEED AP course
- Summer 2019 — Certified from Autodesk Training Center in Revit and FormIt
- Spring 2015-2020 — Dean's list in Notre Dame University
- Fall 2018 — Worked with UN habitat in Surveying Naameh

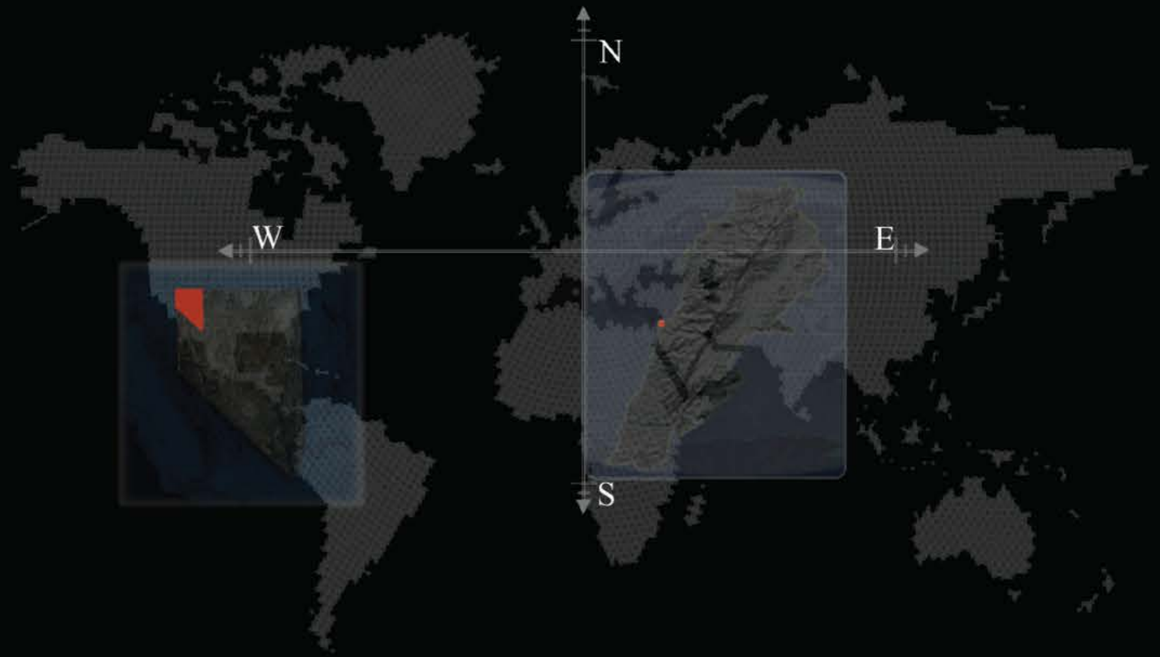
Sports

- Developed skills — Soccer, tennis, swimming, ping-pong

References

Upon request

Projects Locations



References to check

-https://parametric-architecture.com/pablo-lorenzo-eiroas-installation-uses-origami-to-animate-a-robotic-metal-forming-shell/ Public Installation in NYC park

-https://www.youtube.com/watch?v=5dftX6IU7Sc Final year project (Individual Work)

-https://www.youtube.com/watch?v=iyx_jCuhN2w Lebanese pavilion Expo Dubai 2020 proposition

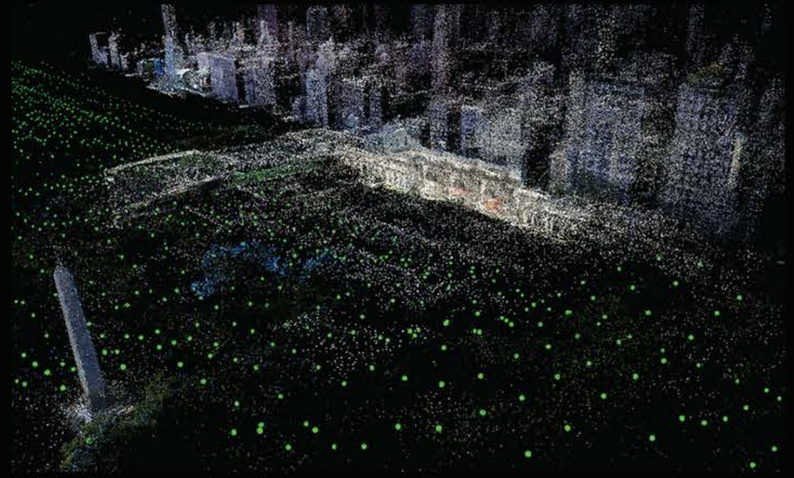
-https://www.livv.com/ Livv houses (While working at MAC Architecture)

Graduate Work

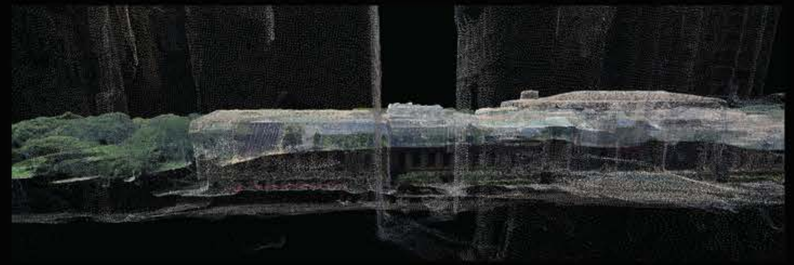
Big data

Type: Graduate Program
Location: New York Institute of Technology
Date: 2023-2024

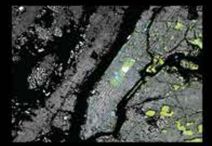
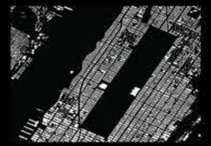
A focuse on specific issues of representation through computational design. An informed realism implies that reality is continuously transformed by information systems, with the designer now positioned to intervene directly upon reality by recognizing and displacing information systems.
Experimental applied research was conducted in this studio, within a range of spatial based problems, including: Big Data gathering and processing; to simulation; to emergent geometry
implementing computational languages, machine learning and artificial intelligence.

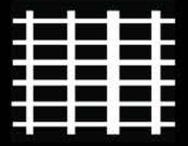


Point Cloud generation using photogrammetry processed in Reality Capture, trying to get get informed about the real through mediums that would allow a further discovery of unseen truth.

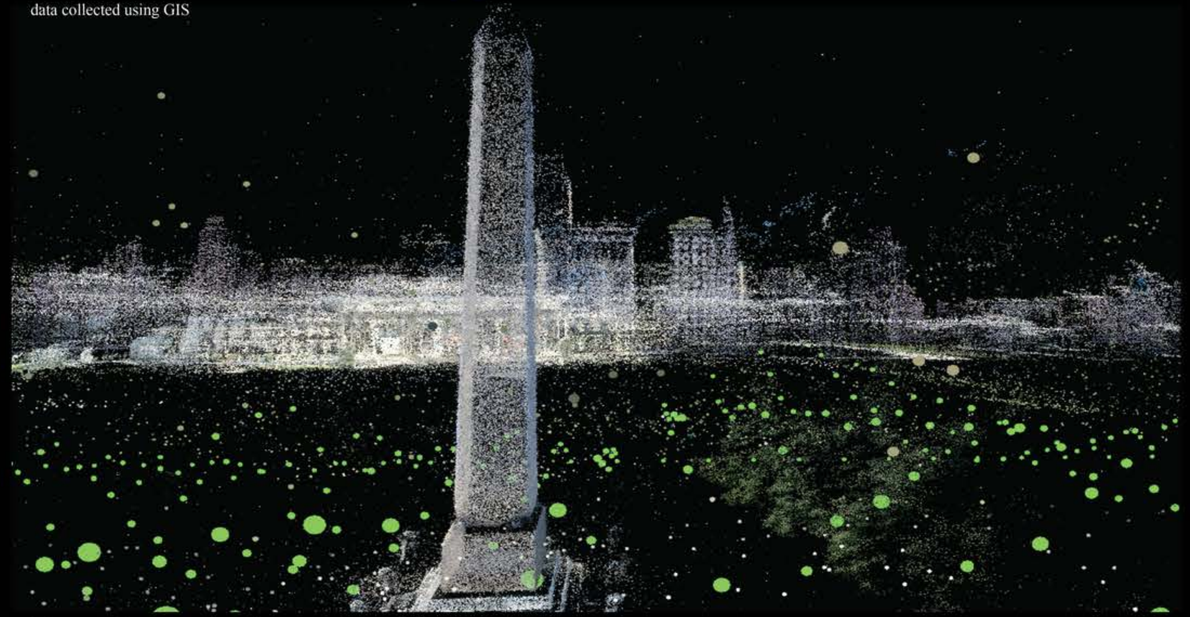


Data Collection



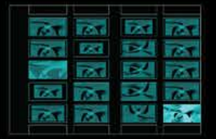
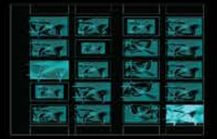
data collected using GIS



From data gathering to data Generation

Data Visualization



Re-imaginging a dyanmic urban grid reaction to site data

Site based computation

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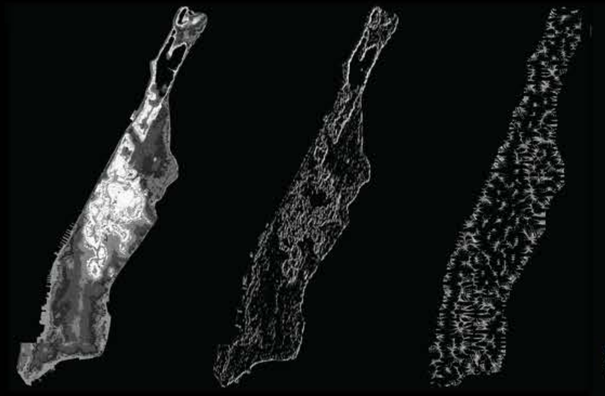
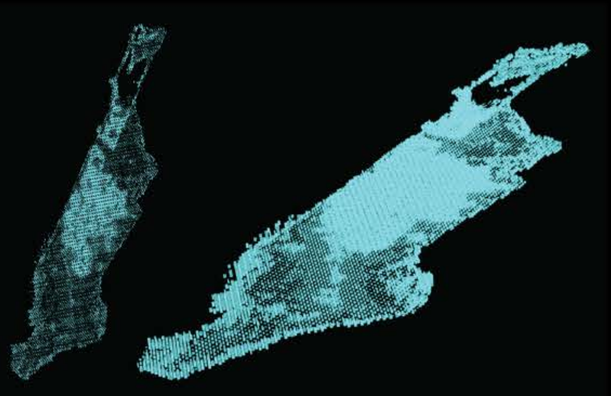


DEM of Manhattan

Topography Generated

Water Runoff



Reconfiguration of Building Blocks across Manhattan based on the DEM and Flood plane

Different maps generated using different methods and data sets

Computation & Fabrication

Type: Graduate Program
Location: New York Institute of Technology
Date: 2023-2024

Extremely thin (0.022") shell structure installation in NYC Park.
"Gaudi' NYC Skyscraper: Inhabiting the skyline"
The thin shell structure is based on a lower dimensional origami mesh folded and increased
dimensionally into 3D thanks to a robotic incremental metal forming technique. Our project came together after various forms of research, this time into a full scale public art installation for the Stapleton Waterfront Park in Staten Island which opened on the weekend of May 18-19th 2024, NYC design week, and as part of the Art in the Parks program.
Our research since 2005 has been working with thin metal robotic incremental sheet forming, lately integrating Big Data, Simulation and AI.

Credits:
Pablo Lorenzo-Eiroa (artist, PI, copyright, photos)
Mike Saad (RA)
Yashraj Chauhan, Arefin Chisty, Selin Dastan, Jacob Sam; Meraj Nasir, Karan Patel,
Alejandro Romero, Amisha Bavadiya, Jahan Selim, (RS) MS ACT SoAD.

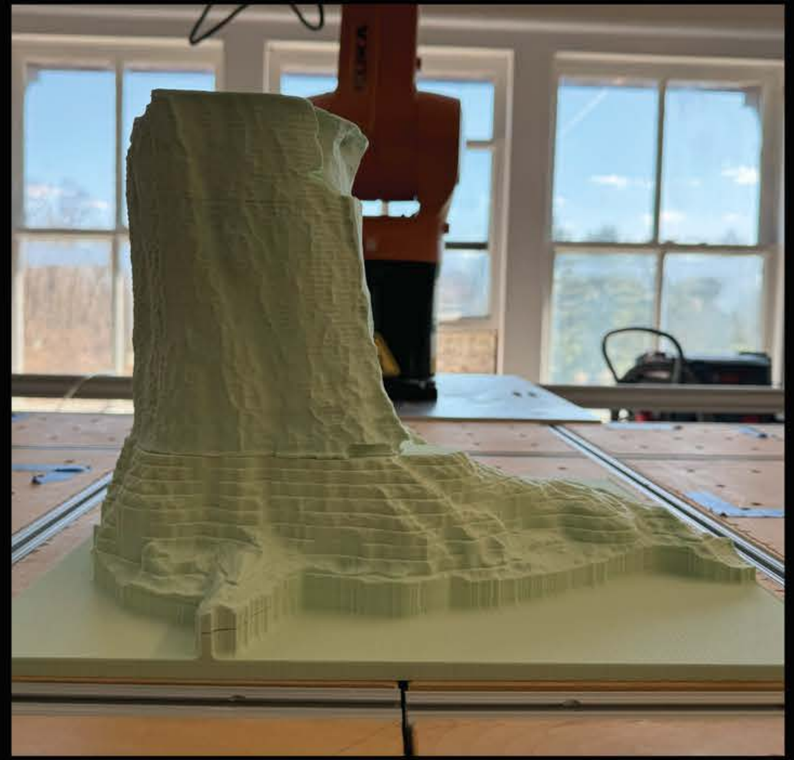
Sponsored by NYIT ISRC
NYC Parks Senior Public Art Coordinator:
Elizabeth Masellat

Fabrication

Robots made it everywhere, even to places where humanity did not physically reach

Type: Graduate Program
Location: New York Institute of Technology
Date: 2023-2024

The project describes a paradigm that emerged with appearance of Digital Modeling and Fabrication.
In the old days the Architect and the builder were intertwined, with time the Architect got separated from building but, with the advancement of technology, Architects are back to building but, through new mediums: The Digital (model) and the Real (fabrication tool).
Through this emergence arises a new critic. Is the Fabricated Model a direct translation of the Digital Model?
Resolution comes to question. Can both models have the same resolution?
In Fabrication, the tools that are being used affect the resolution of the end product, hence with every tool bit used a different yet similar output is being produced.

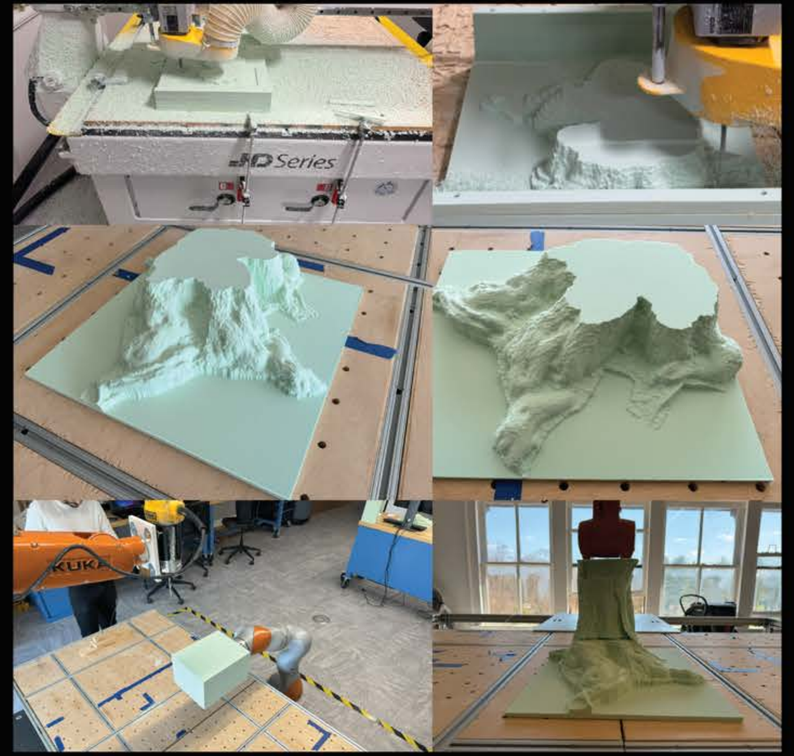


From Reality to Digital to Fabrication

Photogrametry to Geometry to Robot milling

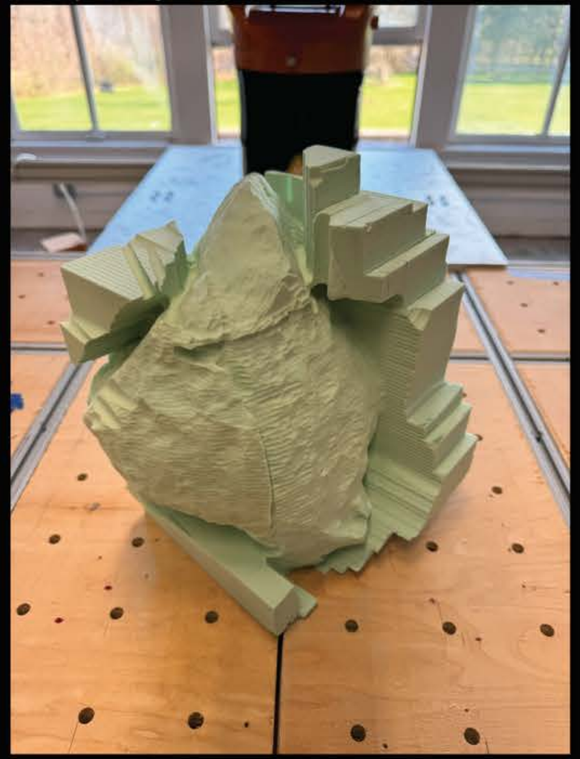
Reality through Fabrication

The ability to go from reality to digital to fabrication, opened the possibility to recreate reality and to better understand it, especially in cases where humanity cannot reach it.
The process of aquiring point clouds through photogrammetry, generating geometry from them, and fabricating it, gives us the opportunity to uderstand the unknown and unatteinable.



Reality through Fabrication

Reality through Fabrication



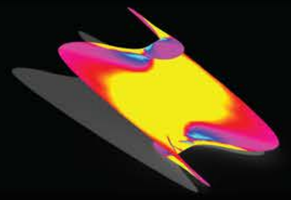
Model Making

Geometry Analysis

U curves

V curves

Curves describing Geometry



```
Minimum u = 0
Maximum u= 2
Minimum v= - 1
Maximum v= 1
PointCount u= 10
PointCount v= 25
Function X(u,v)= u*cos(v)-u^(2* Sym -1)/(2* Sym -1)cos((2 Sym -1)*v)*cos(a)
Function Y(u,v)= -u*sin(v)-u^(2* Sym -1)/(2* Sym -1)sin((2 Sym -1)*v)
Function Z(u,v)= tr*sin(v)
Variables: Sym=2, a=PI/2, tr=2
```

Generatrix

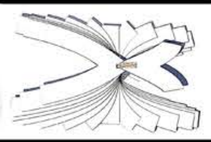
Directrix

Describing lines

U curves

offset Ucurves

Loft u curves

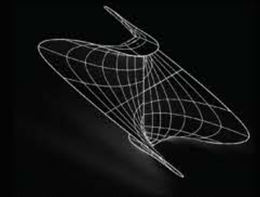


model pictures

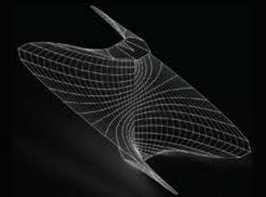
Type: Graduate Program
Location: New York Institute of Technology
Date: 2023-2024

Paper Model

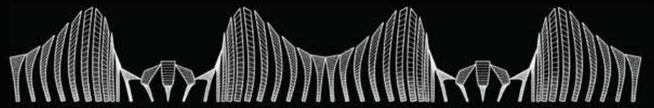
Geometry Description



Surface Described with u and v

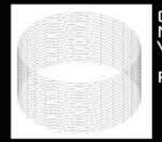


Surface Described with strips following u and v



Surface Unrolled

3D printing_Gcode Manipulation



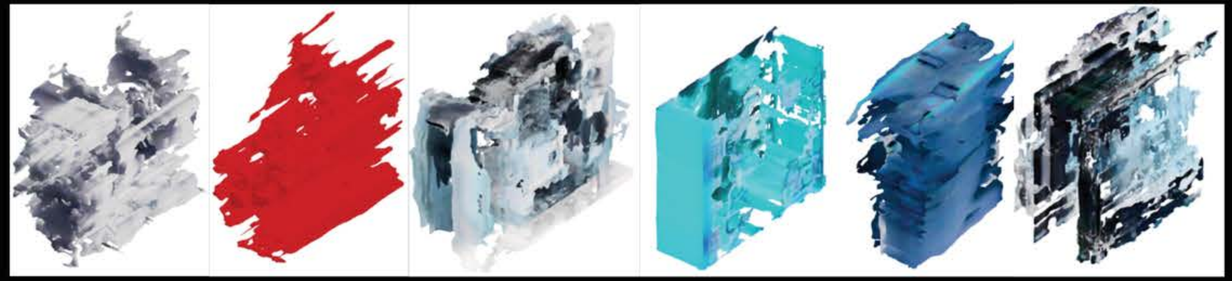
Geometry: Cylinder
Material : Pla
Variables: Heat, Extrustion Rate,
: Feed Rate
Printer : Creality 3

S:200
E:variable to line length
F:50

S:200
E:variable to line length/25
F:65

S:180
E:variable to line length/20
F:50

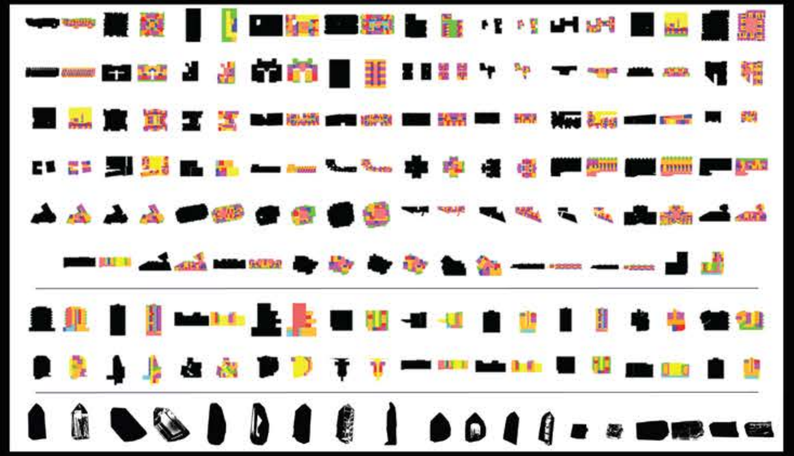
Machine Learning



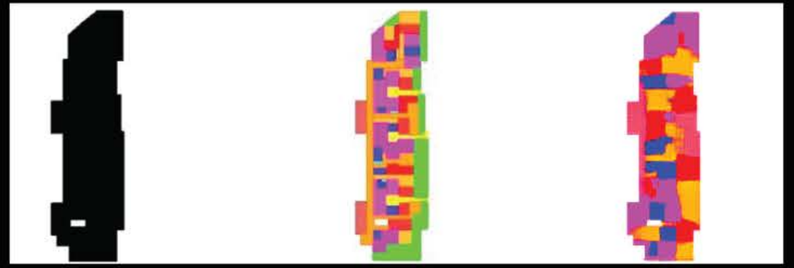
Type: Graduate Program
Location: New York Institute of Technology
Date: 2023-2024

Using Machine Learning, speicfically the pix2pix Algorithm, and by collecting and labeling a dataset, we were able to train a model that outputs a schematic colored plan that refers to different functions.
By training a different model that was based on the refraction of light on different crystal surfaces, the output was able to mimic light reflection and refraction on crystal surfaces.

Finally, by combining both models, we were able to generate an output that was giving a 2D schematic floor plan struck by openings mimicing the behavior of light on surfaces.

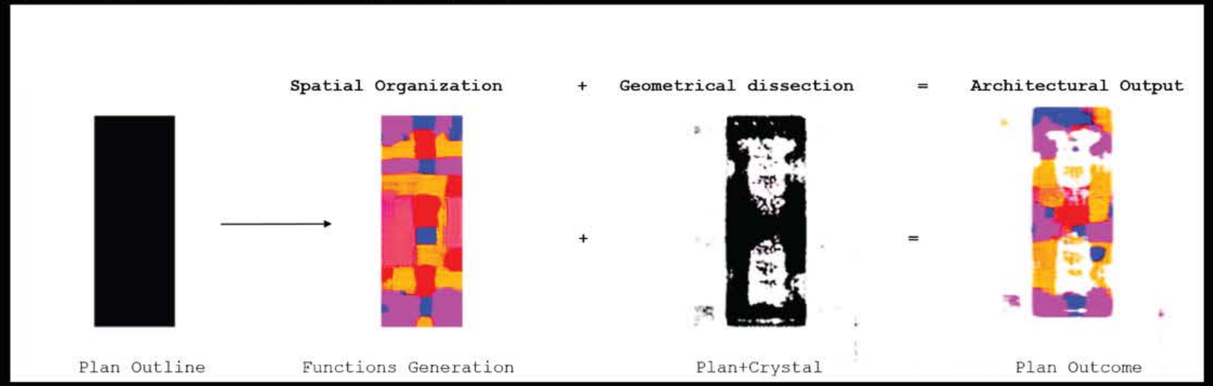


Once this process is done, the output of both models was augmented through different processes to move from 2d to 3d geometry, experimenting with the results.

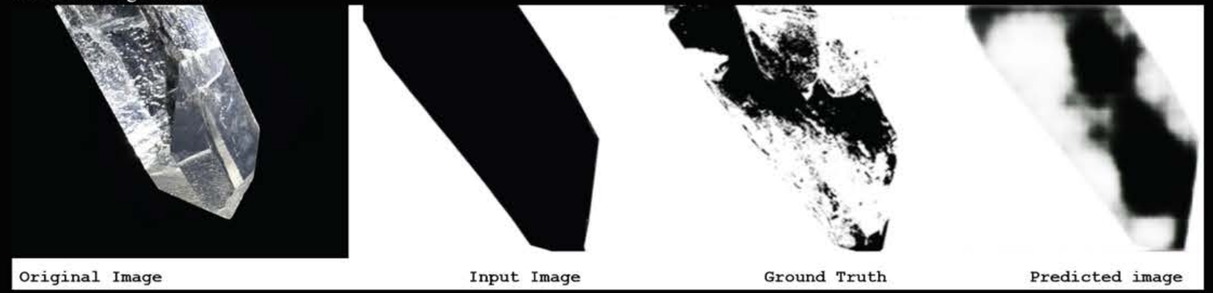


Input Image | Ground Truth | Predicted image

Process
pix2pix: conditional generative adversarial network (cGAN)

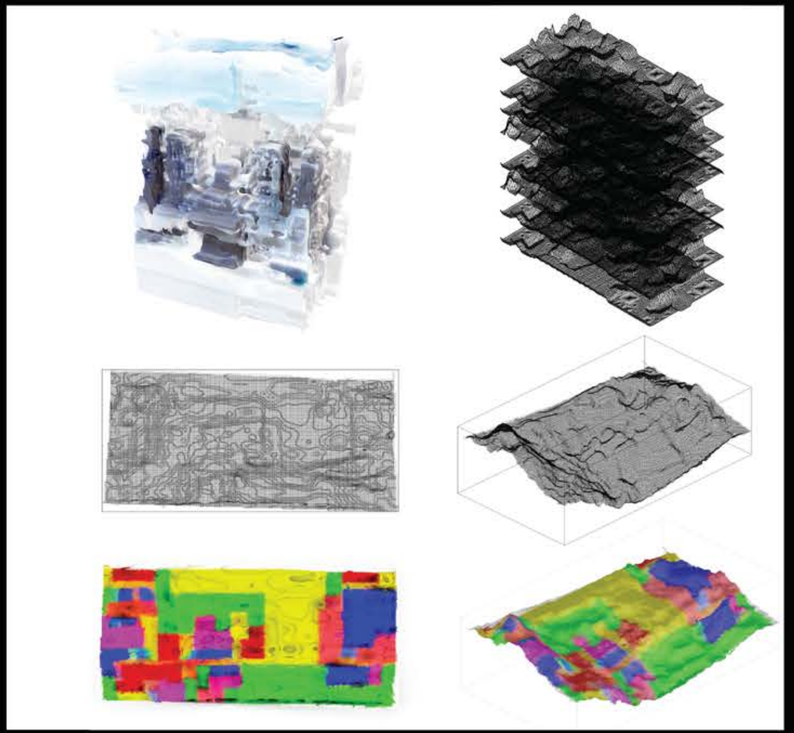


Workflow Organization

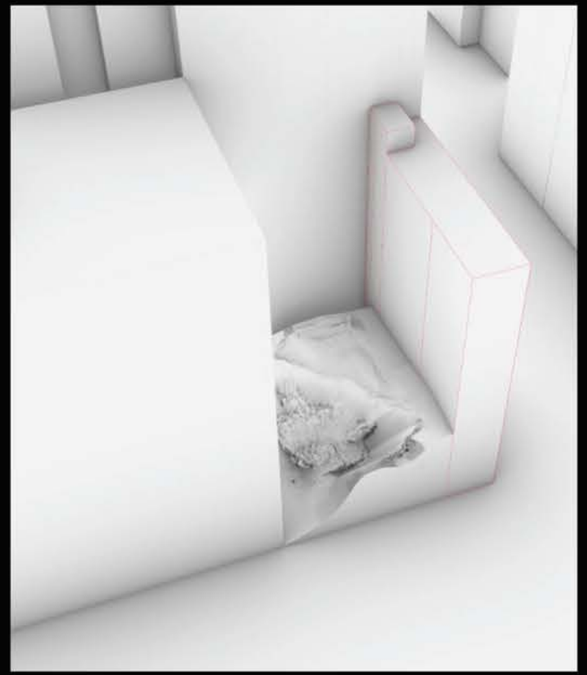


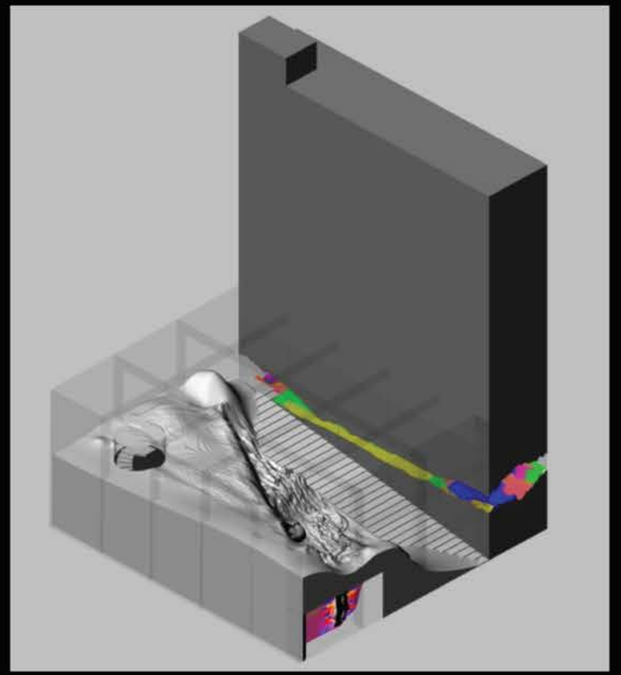
Creating a workflow, a process that can take us from going from a conventional Architectural schematic plan to an augmented Schematic plan and ending with an experimental 2.5d output allowing a further interpretation of it.

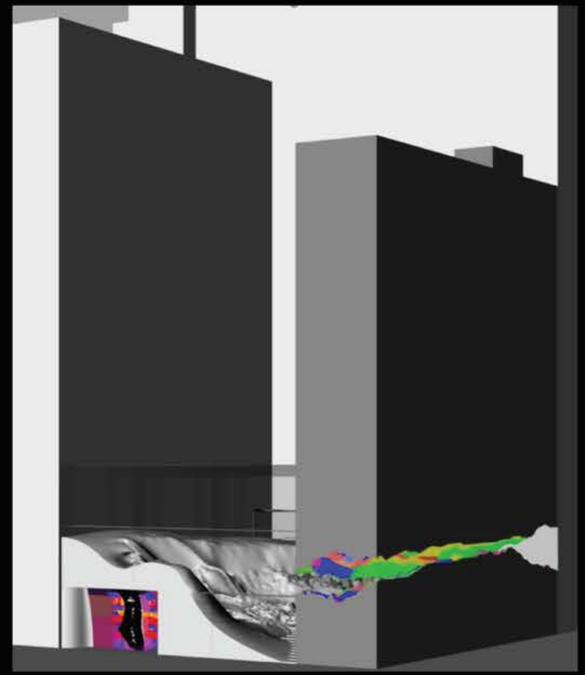
This can help extend the boundaries of imagination, diving into generative models that one cannot imagine or predict, rather enjoy the emergence of the output and explore the different possibilites that can come out of it.



Process
From model to architectural approach.
Going from model to integration in architecture.







PECCIOLI x NY

SustainArt

Building a Sustainable Future through Architecture and Arts

Curators: Maria Perbellini, Alessandro Melis, Marcella del Signore, Christian Pongratz, Nico Panizzi
Organization: Susan Sternberg
Design: Mike Saad
Video Production: Kevin Park

The collaboration between the School of Architecture and Design at the New York Institute of Technology and the town of Peccioli in Pisa, Italy, represents a distinctive opportunity for research, professional collaboration, and educational endeavors. This partnership not only advances academic research but also contributes significantly to the broader discourse on sustainable urban development, circular economies, and the transformative role of arts and architecture in creating inclusive communities. The impact of this initiative extends beyond academia, fostering innovation, and meaningful social change in alignment with the UN 2030 Agenda.

Peccioli Model Town
The primary aim of this initiative is to underscore the research significance and the impact of the partnership, with a particular focus on Peccioli as an exceptional urban living laboratory model. Peccioli is considered a paradigmatic case study in environmental sustainability practices, successfully applying circular economy principles and a pioneering social community project. Its remarkable journey in minimizing inequality and democratizing access to arts and architecture has earned it international recognition and acclaim.

Environmental Sustainability
This exhibition documents the innovative sustainable strategies implemented by Peccioli in exceptionally effective waste management. Peccioli's model for advanced waste landfill systems and treatment plants was presented at the Architecture Venice Biennale in 2021 and 2023 in exhibitions curated by SOAD.

Social Energies
The exhibition also highlights how Peccioli's social model showcases the potential of architecture, arts, and technology to eliminate inequality and promote social inclusivity. It demonstrates the social benefits of accessible arts and architecture and their impact on educational practices at New York Tech.

NEW YORK INSTITUTE OF TECHNOLOGY

School of Architecture & Design

SECTION 1

Peccioli as it is perceived by the world. This section features international architects, planners, and institutions who have engaged in creative research or have been profoundly influenced by Peccioli's pioneering model. The exhibition explores the global impact of Peccioli's groundbreaking approach in the field of architectural ecology and urban resilience.

Contributors:
Christian Pongratz, Maria Perbellini, Dustin White (New York Institute of Technology)
Marcella Del Signore (New York Institute of Technology)
TAMassociati
Eric Goldemberg
Jesus D'Alessandro/ Universidad Iberoamericana (UNIBE)

Education:
Miriam Barbosa
Wilson Zhou

SECTION 2

A Glimpse of Peccioli in New York and the Future of the Built Environment In this section, the exhibition showcases the interdisciplinary perspectives of international creative artists, spanning from architecture to digital arts, comic art, and music, who have made significant contributions to the unique Peccioli cultural movement. Their work also reflects Peccioli's social energy and creative talents.

Contributors:
Riccardo Burchielli
Vittorio Corsini
Fabio Frizzi
Fabio Montorzi
Ozmo
Alessandro Zannier

Professional Work

LIVV

Sunfolia

Veloure

Thia

Paragon

Joelene

Elysium

Type: Work
Location: Las Vegas, Henderson
Date: 2021-12-01

1/5

2/5

Elysium House plan design options

different variations of plan layouts as well as different exterior design finishes

User specific design, altered to suit their own needs

3/5

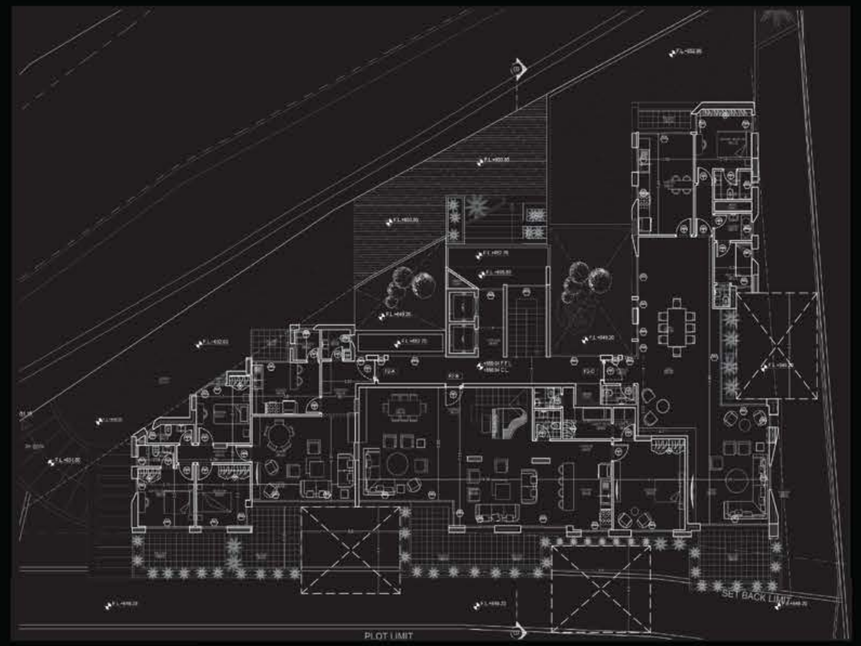
4/5

THE WHITE DOT

Type :Work
Location: Sheile,Lebanon
Date :2021-03-01

Type: Residential
Location: Shaile, Lebanon
Size: 3000 m2
Year: 2020
Status: Under Construction

Nestled in the heart of Shaile, Kessrouan, the white dot building allows an eye catching symbiosis of a bio-facade technology with an elegant residential building that consists of three separate apartments per floor, promoting natural views, exposure, lighting, ventilation, as well as optimal integration in a swift urbanized village. The first characteristic of the project is to use energy as minimum as possible. The second one is to apply water efficiency, and the third is to produce a minimal amount of CO_2 and CO to reduce air pollution. With solar cells implemented on the roof, the energy absorbed is used to light the lamps, outdoor lighting, warming rooms, warming water… thus, there will be no emissions either air pollution or water pollution.



Excavation of the site 2021.05.28

Basement 3 erection 2021.09.01

Basement 2 erection 2021.10.07

East of view of the building

Perspective views of the building

Susainable Strategies:

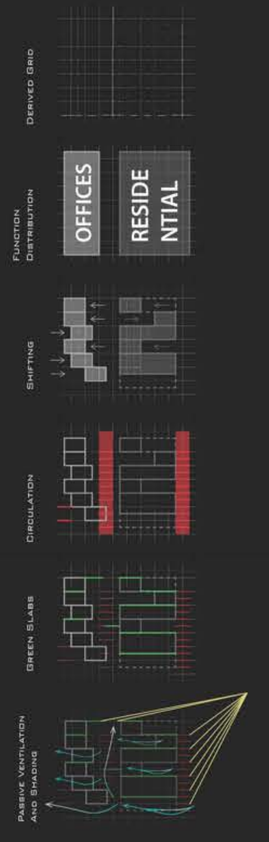
1 **Materials:** Materials chosen are steel and polycarbonate. Scaffolding is reusable, has a strong structure, can be easily assembelled and disassembelled, and requires little energy to do so. Even though polycarbonate is plastic, however, it is recyclable, has multiple usage, can be easily assembelled, and is good for acoustic comfort, visual comfort as it brings in diffused light, and thermal comfort where it reflects heat back when used in light colors.

2 **Ventillation:** The Volumes are seperated by a void that creates a large atrium where heat is absorbed upward. The blocks are rotated and shifted to create air cavities.

3 **Daylighting:** Office Blocks have the longest facades to the north to provide indirect lighting for task visual comfort. The residential blocks are a square to benefit from adequate light distribution. Polycarbonate sheets also allow diffused natural light to enter the spaces.

4 **Shading:** The residential circulation is located on the south facade and act as a shading device as well. Offices' southfacade is protected by the residential block.

5 **Gardens:** A green tornado spins in between the blocks creating green voids for the residents to enjoy. Residential gardens are towards the south and more private whereas gardens towards te offices are public.



Bahelor Work

THE SLOW SPACE

Type :Senior year project
Location:Lebanon,Mar Mikhael TrainStation
Date :2019-06-02 2020-05-01

Break gives your mind a little space

SLOW ≠ MOVING SLOW **LIFE ≠ RACE**
SLOW = PAUSE & *Enjoy Life* **LIFE = SLOW**

WATER IS THE ANTIDOTE TO "RED MIND" A STATE OF ANXIETY CREATED BY INCREASED URBANIZATION.
-SOOTHING ATMOSPHERE FOR OUR MINDS.
-HELP US TO LET GO OF OUR THOUGHTS AND BE PRESENT

-CHANGING OUR PERSPECTIVE AND SEEING PARTS OF OURSELVES THAT ARE USUALLY HIDDEN
-RE-EVOQUE OUR SENSES
-OUR SENSES COME ALIVE WITH THEIR EXERIENCE WITH MIRRORS

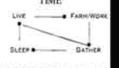
-GENERATE NEW FEELINGS,,UNIQUE EXPERIENCE
-REDUCE STRESS
-BE PRESENT

PAST
SLOW LIFE

TIME IS FELT AND PERCEIVED THORUGH SPACE

ATTACHMENT SENSE OF PLACE

PSYCHOLOGICAL TIME



IRREGULAR PATERN(FREE)

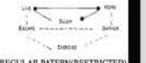
INDUSTRIAL REVOLUTION
EMERGENCE OF SPEED

PEOPLE WANTED TO SPEED UP

PRESENT
FASTLIFE

TIME IS COUNTED

DO THINGS IN LESS TIME



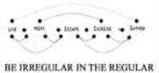
REGULAR PATERN(RESTRICTED)

WHAT IF SLOWING DOWN SPEEDS YOU UP ?

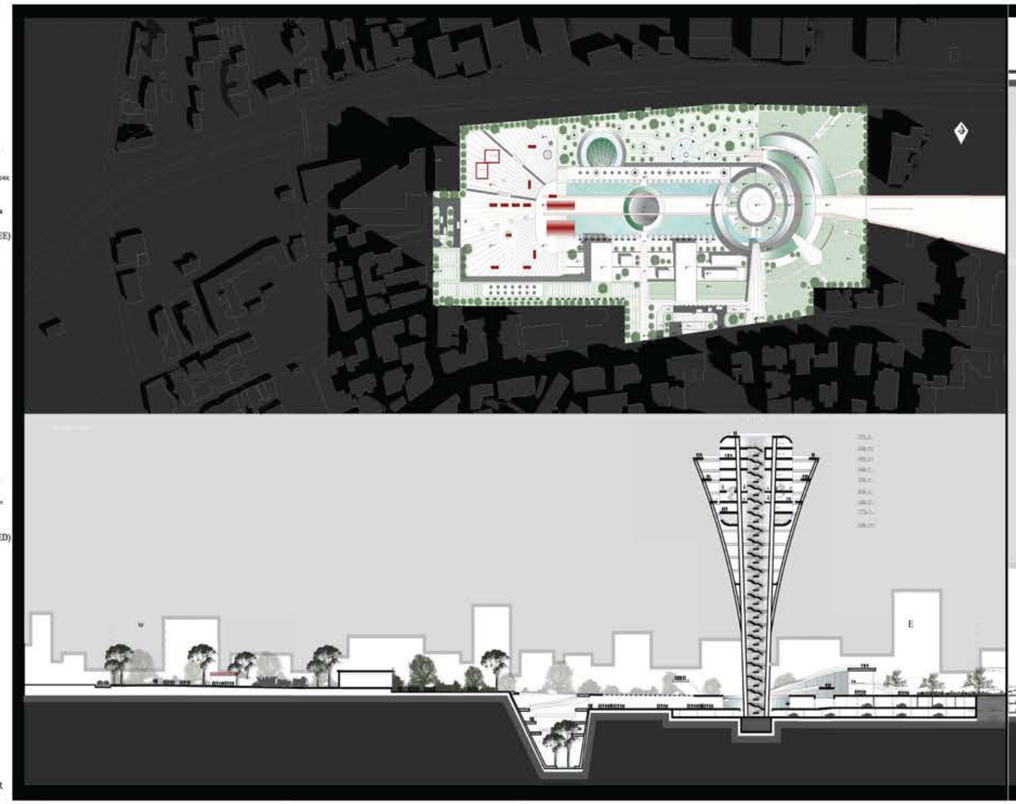
FUTURE
OFF GRID PROJECT IN THE GRID
FASTNESS OF SLOWNESS

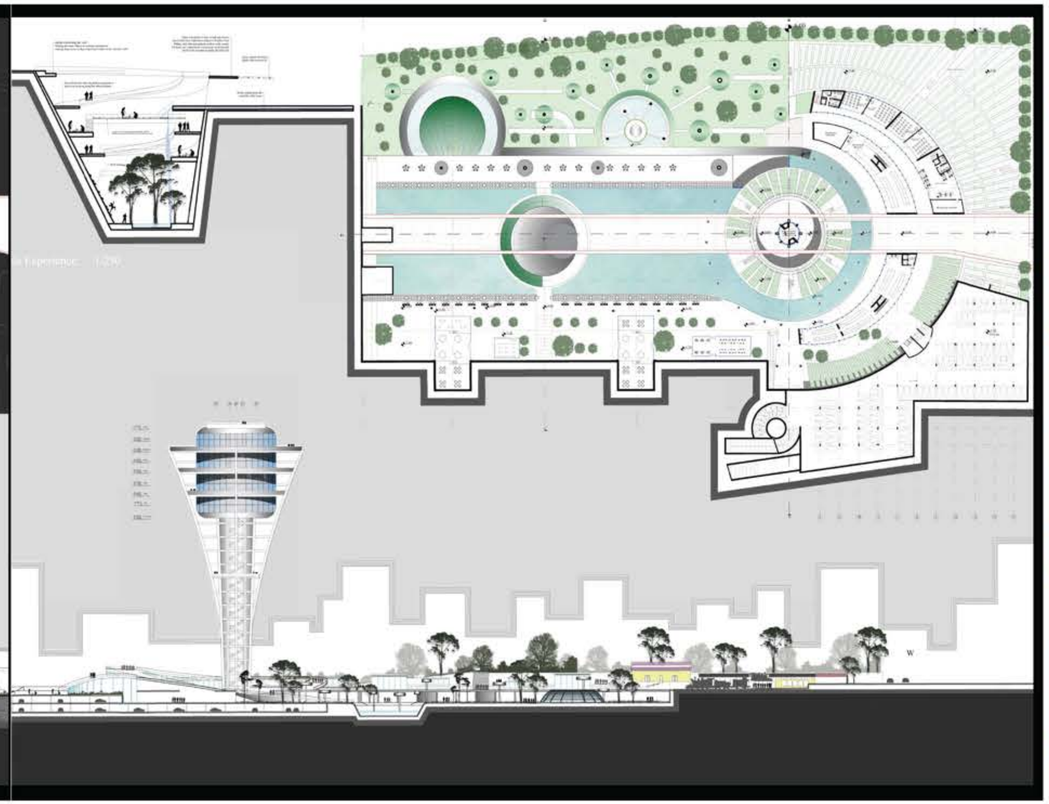
TIME IS ENJOYED

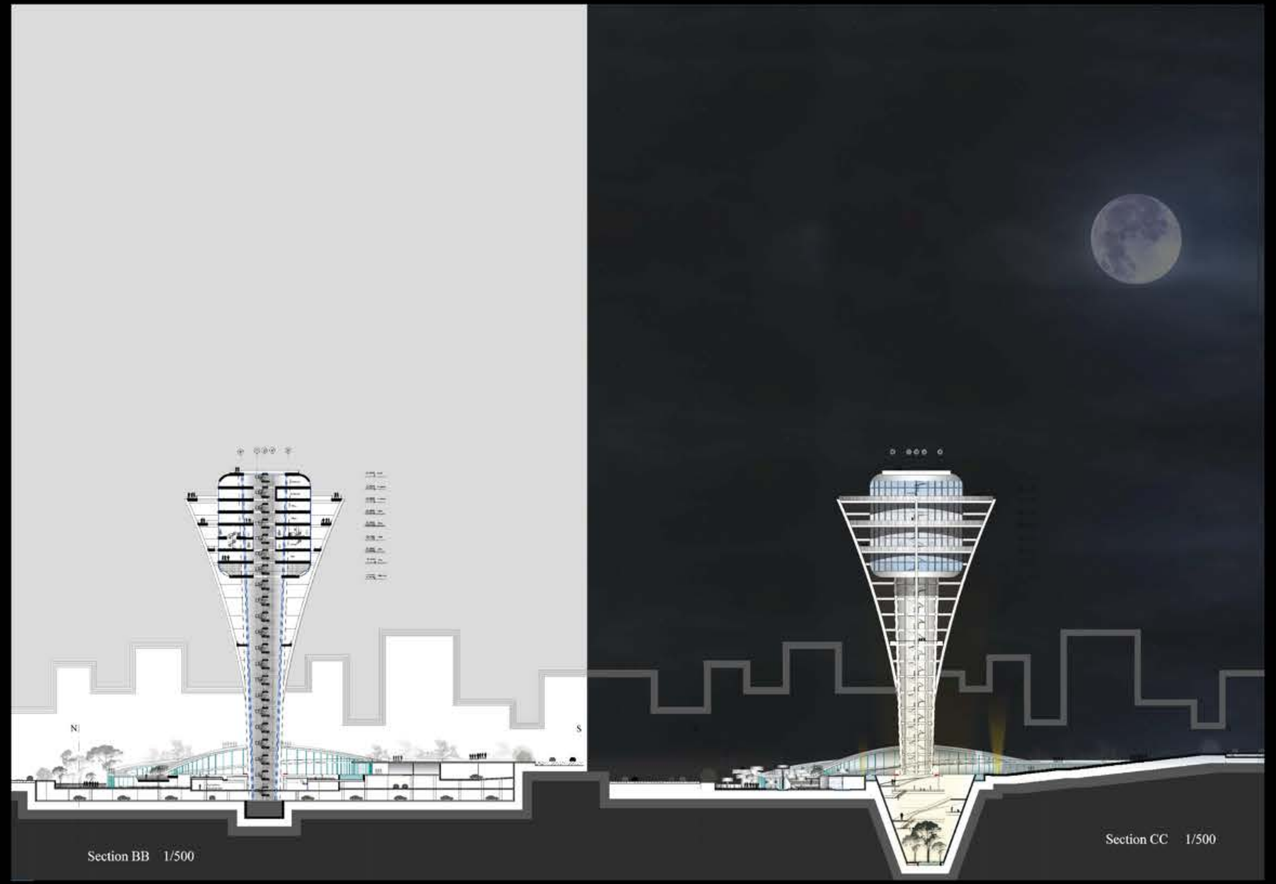
TIME IS ENJOYED



BE IRREGULAR IN THE REGULAR



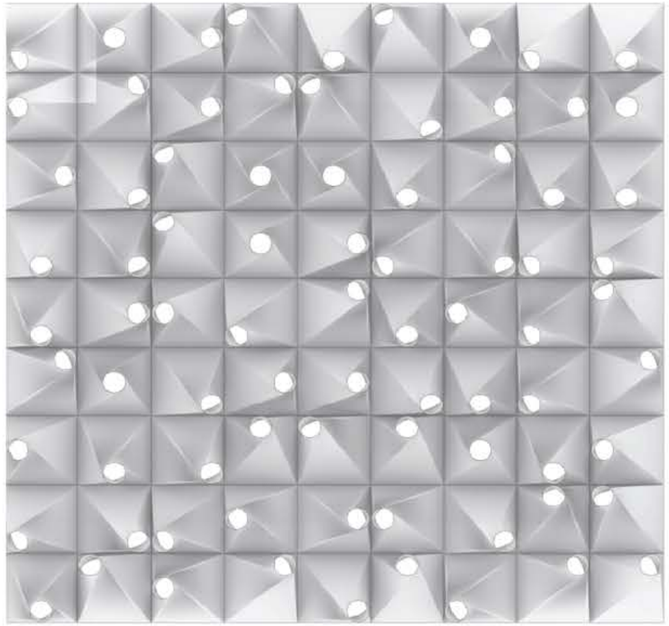



N
S
Section BB 1/500
Section CC 1/500

Computational Design

During Covid 19 outbreak and shortly after graduating, I took on a course offered by University of Michigan entitled: Design Computing 3D Modeling in Rhinoceros with python/Rhino Script .
The main outcome was to be learn how to write a code on rhino for a specific design.

Type :Developed Skill
Location:Lebanon
Date :2021-01-01



cope and integrate

A CONNECTION TO THE PAST OR THE PRESENT

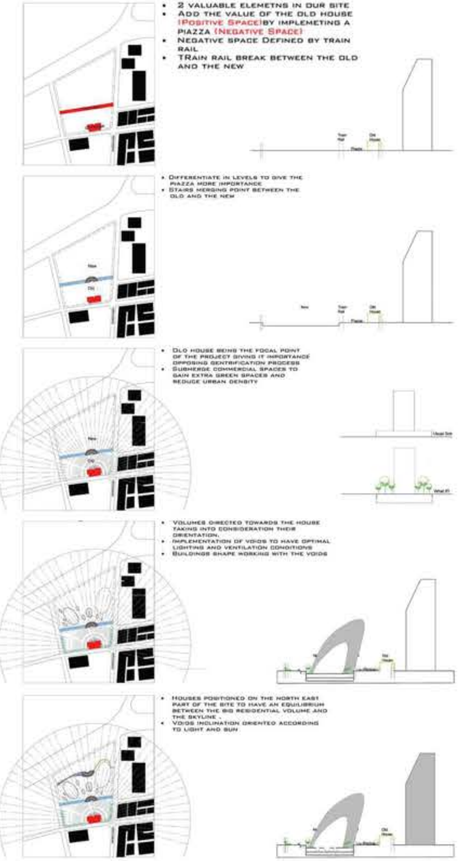
Type :DesV- project
Location:Lebanon,Mar Mikhael TrainStation
Date :2018-09-31 2018-12-11

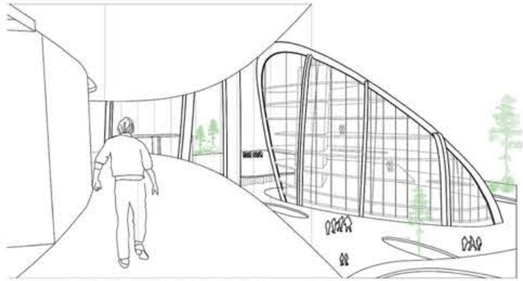
Mar Mikhael a city that is under the process of Gentrification, is subjected to lose its
user friendly identity, a city in which residents connect with each other, Gather and socialize.

In a neighbourhood in the city of Mar Mikhael, lies a site that has a signficant importance
in which the rail of its train station used to pass.

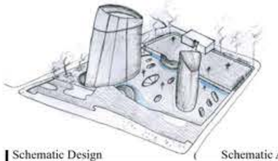
A project that preserves the character of the city, that takes into account the user, the activities that used to take place there and the present needs.
A project that takes into account the diversity and contrast of the old way of **life Vs the new one.**

Preserving the .
Past and Connecting with the Present



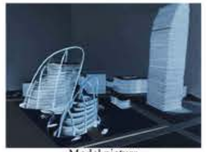


Interior perspective from the Residential Buiding looking towards the offices Building

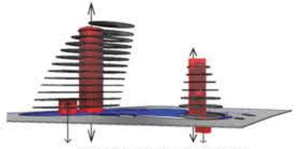


Schematic Design

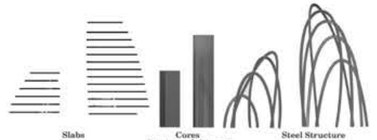
Schematic Approach



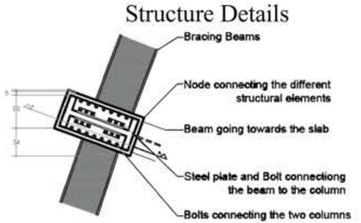
Model picture



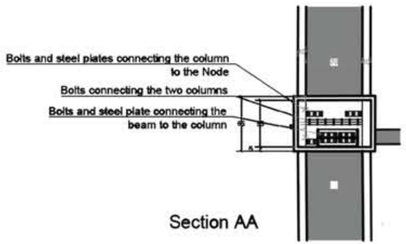
Circulation Diagram of the project



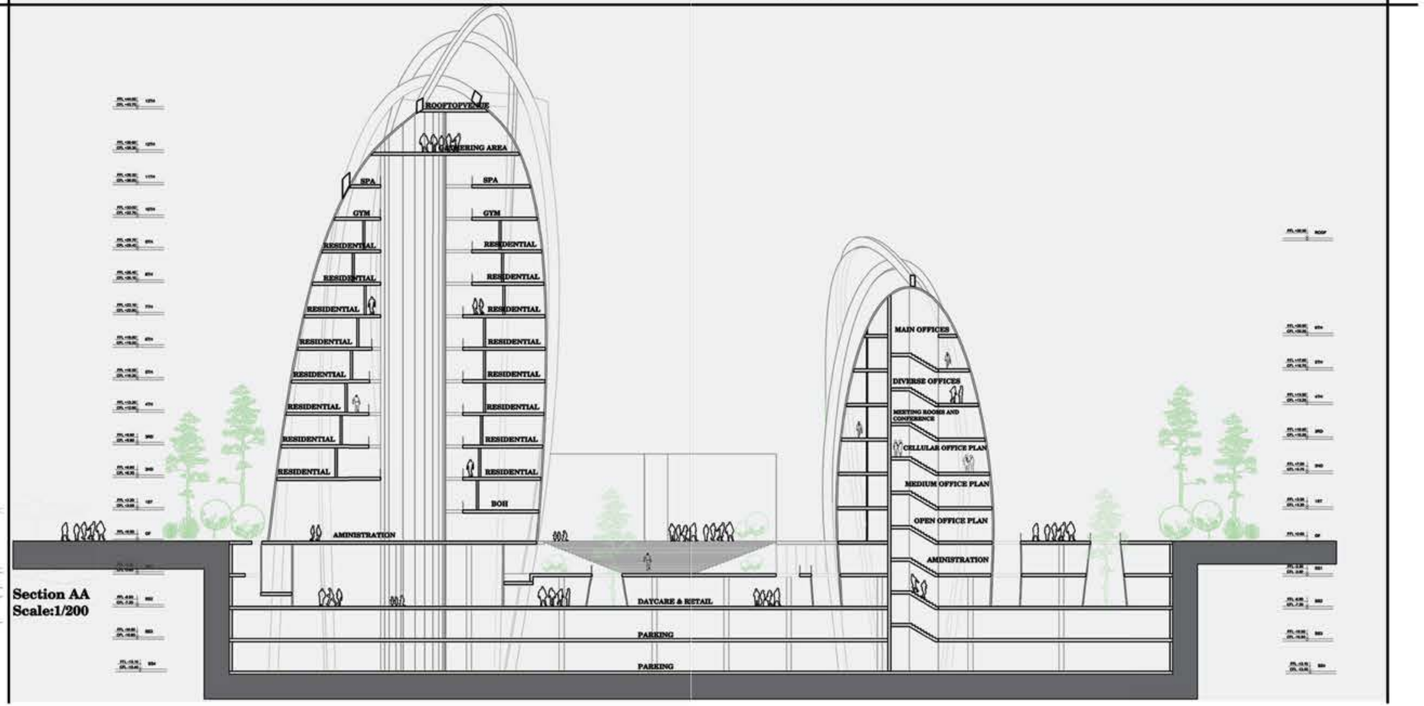
Strcutural System



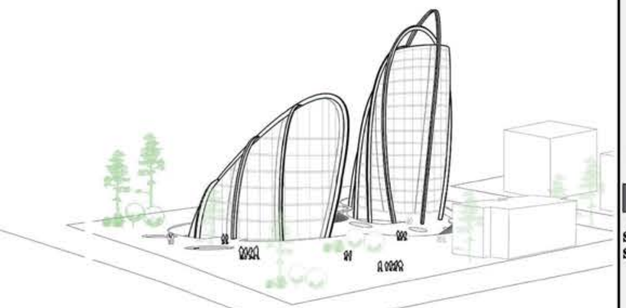
plan



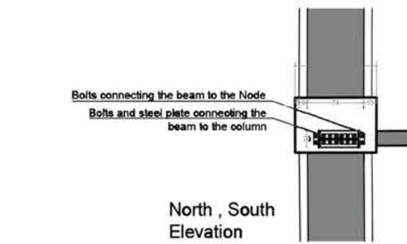
Section AA



Section AA
Scale:1/200



South East perspective of the project showing the relationship between the two structures and the old house aklready present the site



North , South Elevation