

Spring  
2026

# NEXT-GEN ARCHITECT

AI IN DESIGN



University at Buffalo  
Department of Architecture  
School of Architecture and Planning

**INTRO**

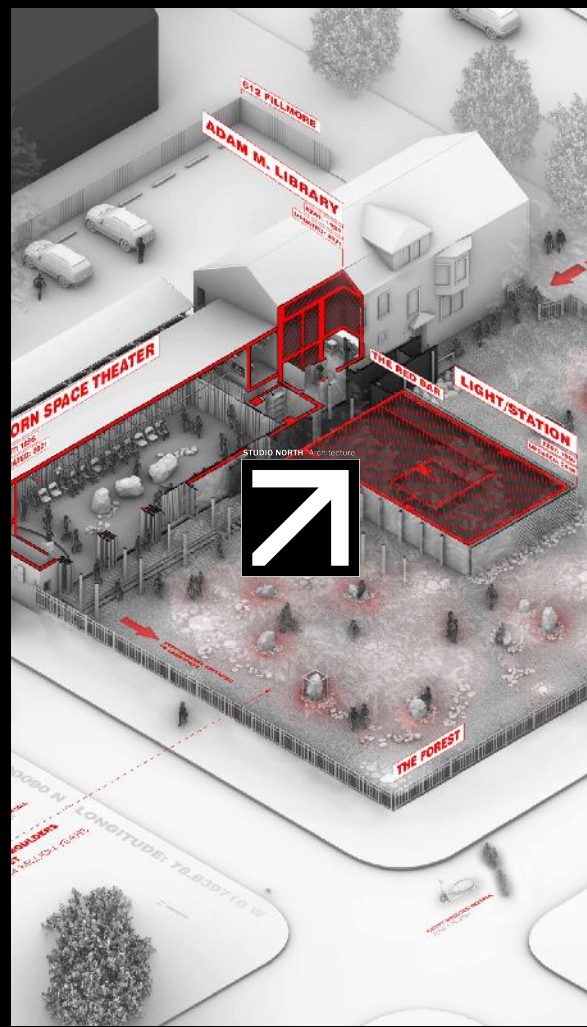
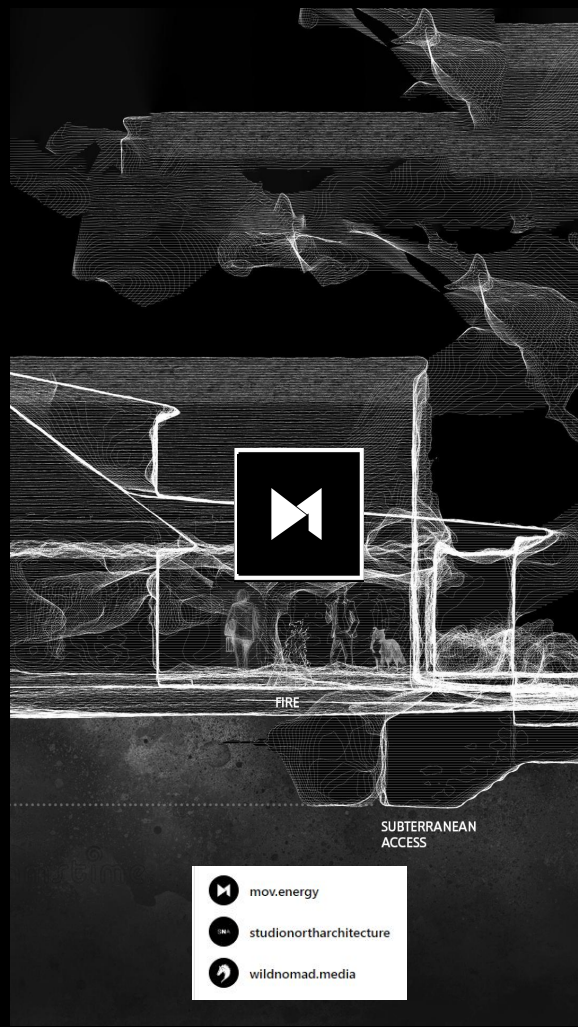
## **Randy Fernando**

Architectural Designer • Educator • Researcher  
AI x Design • Emerging Technologies • Experimental Fabrication

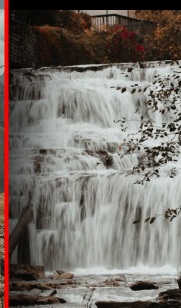
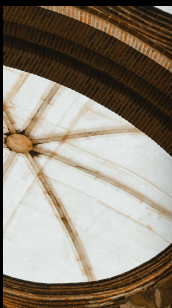
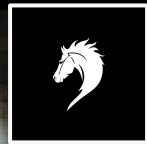
I work at the intersection of architecture, advanced digital tools, and material experimentation, focusing on how AI, data, and fabrication technologies can expand both the design imagination and real-world impact of architecture. My work spans virtual environments, computational workflows, digital twins, and physical prototyping, exploring how designers can move fluidly between speculation and fabrication to shape the next generation of built environments.

My teaching and research integrate:

- AI-assisted design & storytelling
- Advanced computational modeling
- 3D printing, clay fabrication & robotic workflows
- Spatial simulation, VR immersion & worldbuilding
- Real-world, community-focused design applications

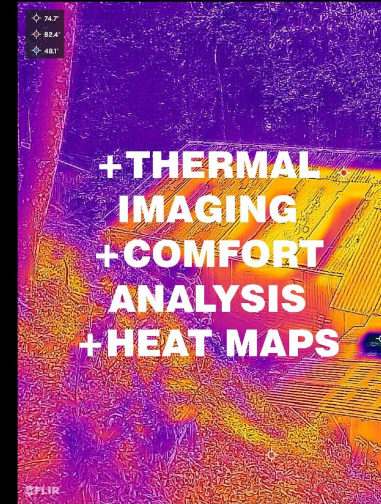
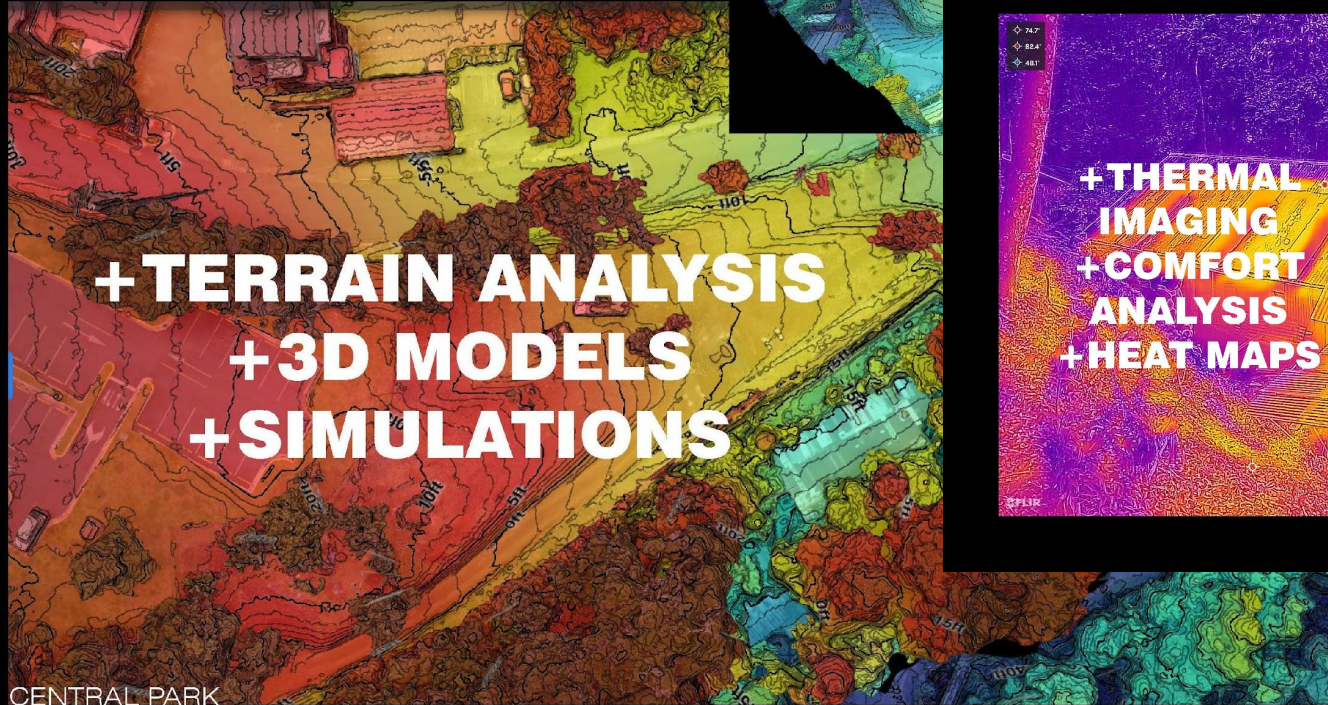




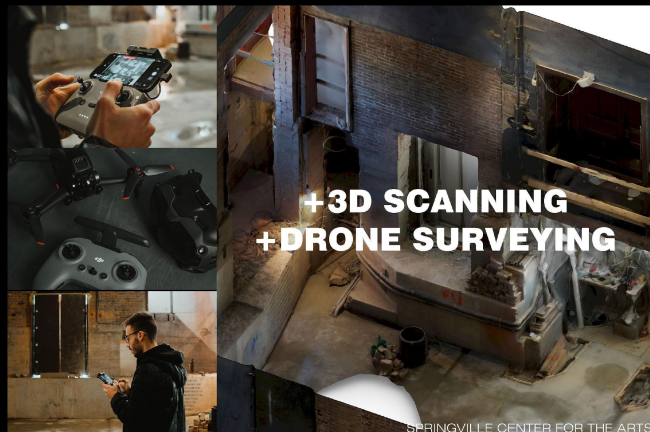




- + ARTIFICIAL INTELLIGENCE
- + DATA ANALYSIS / SYNTHESIS
- + LLM TRAINING





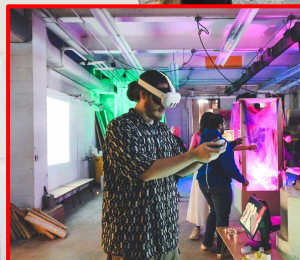
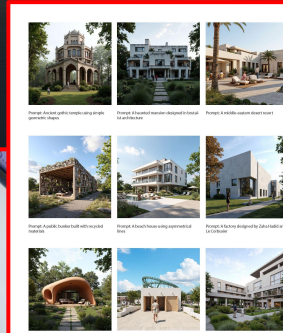
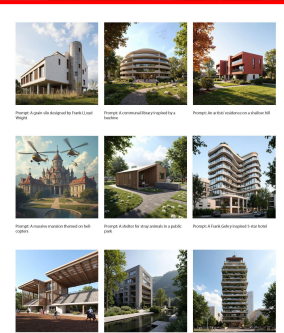
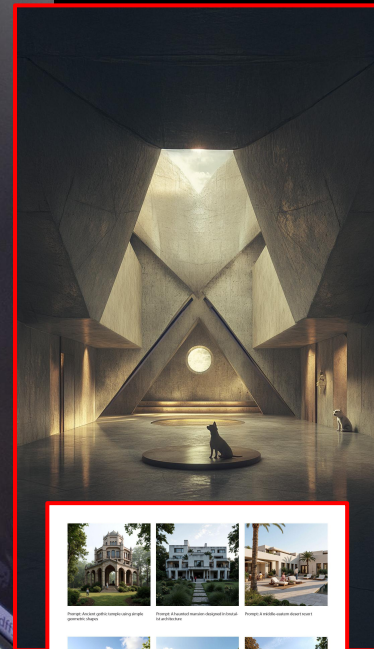




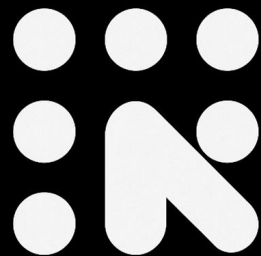
- + CREATIVE EXPANSION
- + CRITICAL REFLECTION
- + EXPERIENTIAL IMMERSION

ADV. 3D MODELING

VIRTUAL REALITY







**NEXT-GEN**  
**ARCHITECT**

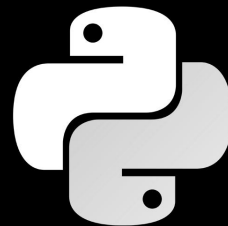
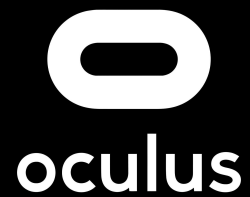
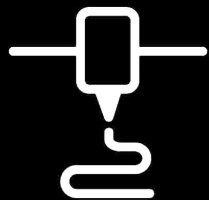
This studio positions students as **Next Generation Architects**—designers fluent in artificial intelligence, computational workflows, and immersive spatial technologies. It challenges participants to leverage AI not as a novelty or automated replacement, but as a strategic design partner capable of expanding creative agency, enhancing performance-driven decision-making, and transforming how architecture is conceived, developed, and communicated.

**PHASE 00**

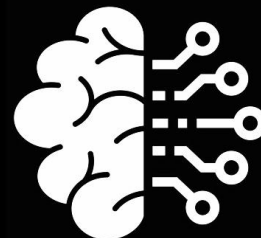
# **AI + TECH BOOTCAMP**



This accelerated bootcamp introduces students to the emerging technological ecosystem shaping contemporary and future design practice. Through hands-on exposure and guided experimentation, students will build foundational literacy and applied skill sets in Artificial Intelligence and advanced computational workflows, including Large Language Models (LLMs), computer vision, parametric modeling, digital fabrication, and robotic toolpaths. Using platforms such as ChatGPT, Gemini, Rhino, Grasshopper, KUKA|prc, and 3D printing workflows, students will learn how to leverage AI for conceptual design, ideation, optimization, automation, simulation, and physical prototyping.



**KUKA|prc**  
parametric robot control for grasshopper



# ARCHITECTURAL WORKFLOW

**Schematic  
Design**

**Design  
Development**

**Construction  
Documents**

**Bidding +  
Negotiation**

**Construction  
Admin**

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**Schematic  
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**Construction**



# ARCHITECTURAL WORKFLOW

AI

**Schematic  
Design**

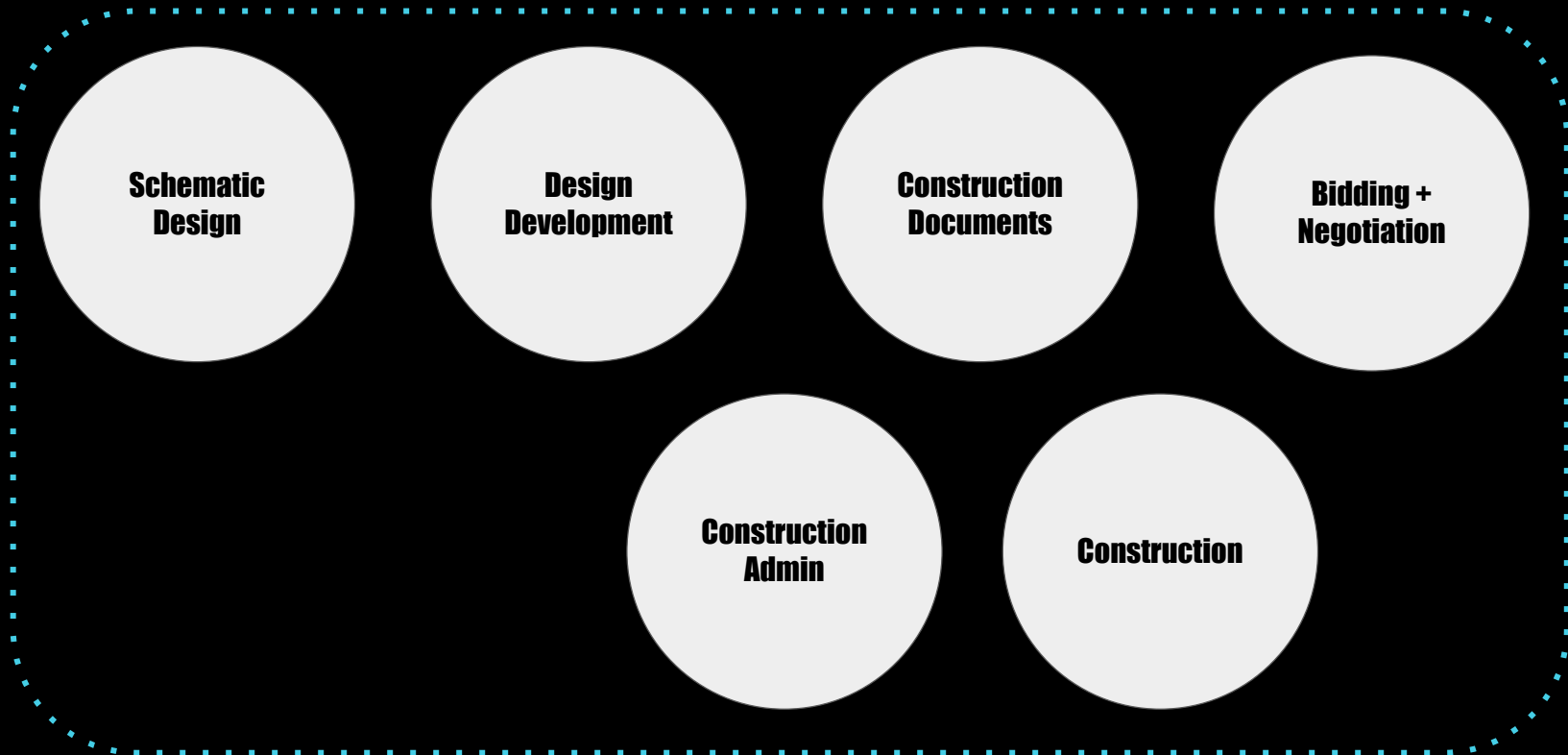
**Design  
Development**

**Construction  
Documents**

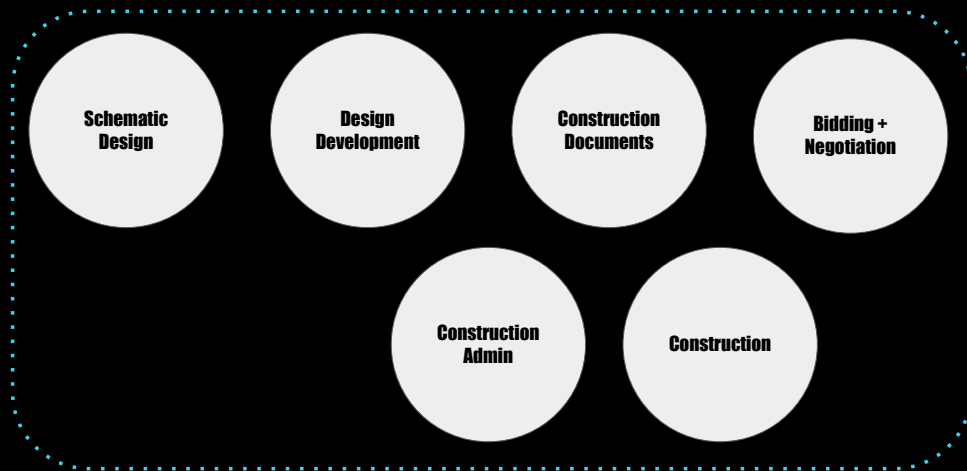
**Bidding +  
Negotiation**

**Construction  
Admin**

**Construction**



# ARCHITECTURAL WORKFLOW

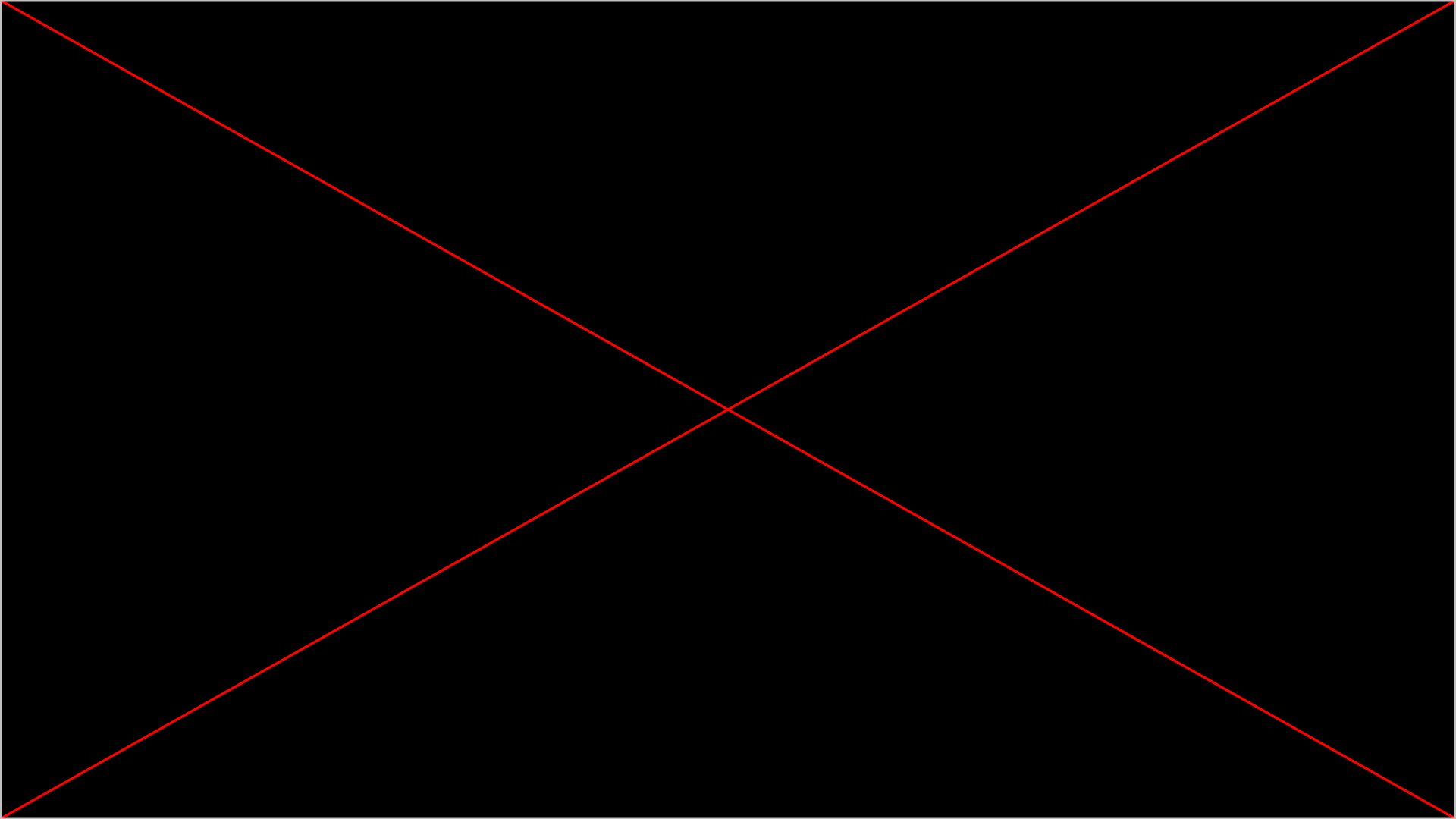


**PHASE 01**

# **SPECULATIVE NARRATIVES**



This module introduces students to speculative narrative as a strategic design method for framing architectural inquiry. Rather than beginning with form or typology, students will construct future-oriented scenarios, world conditions, characters, and environmental narratives that contextualize why their project should exist and what problem, need, or opportunity it responds to. Through storytelling methods rooted in foresight studies, science fiction thinking, socio-environmental forecasting, and world-building techniques, students will articulate the values, constraints, technologies, cultural shifts, and ecological circumstances surrounding their 2035 design proposal. The resulting narrative becomes a project operating system — guiding decisions around material systems, spatial logic, fabrication methods, environmental performance, and AI integration.



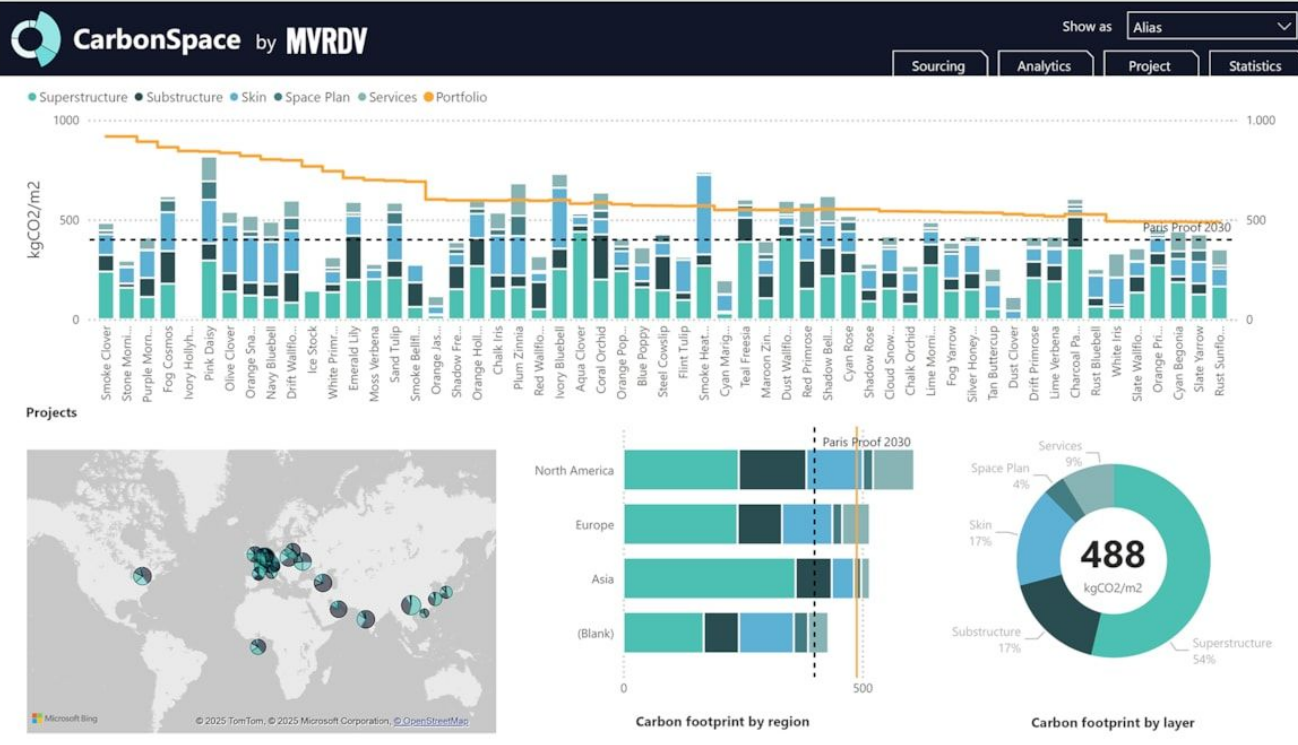
**PHASE 02**

**DIALOGUE +  
SYNTHESIS**

This phase invites students to extend their speculative and research-driven narratives through direct engagement with expert knowledge across professional practice, academia, industry, and emerging technology fields. Students will conduct interviews, structured conversations, or collaborative exchanges with architects, engineers, theorists, technologists, material scientists, policy thinkers, and digital fabrication practitioners. The goal is to validate, challenge, sharpen, or reframe the assumptions within their project narrative by integrating real-world perspectives and frontier expertise.

**MVRDV**

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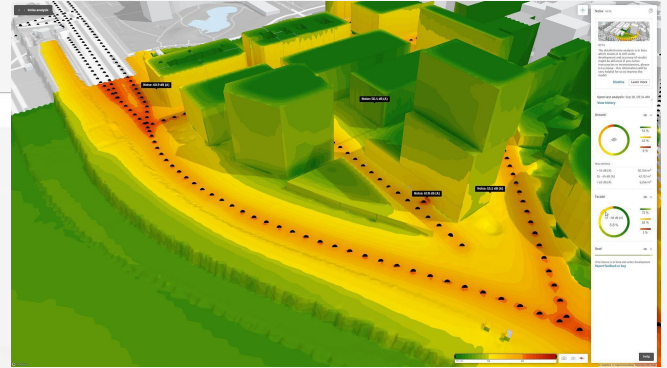
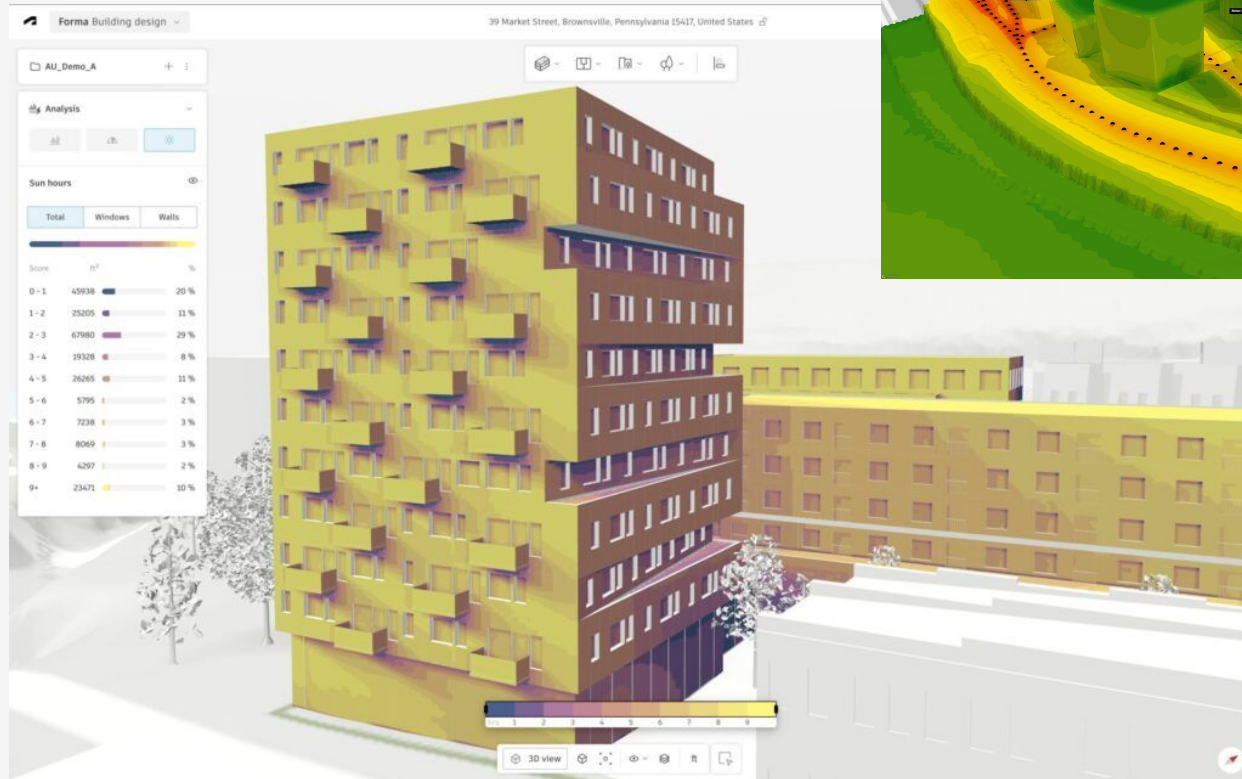
MVRDV Carbon dashboard

Collect your carbon data in one place

CARBON ANALYSIS

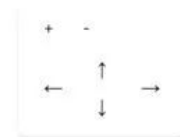
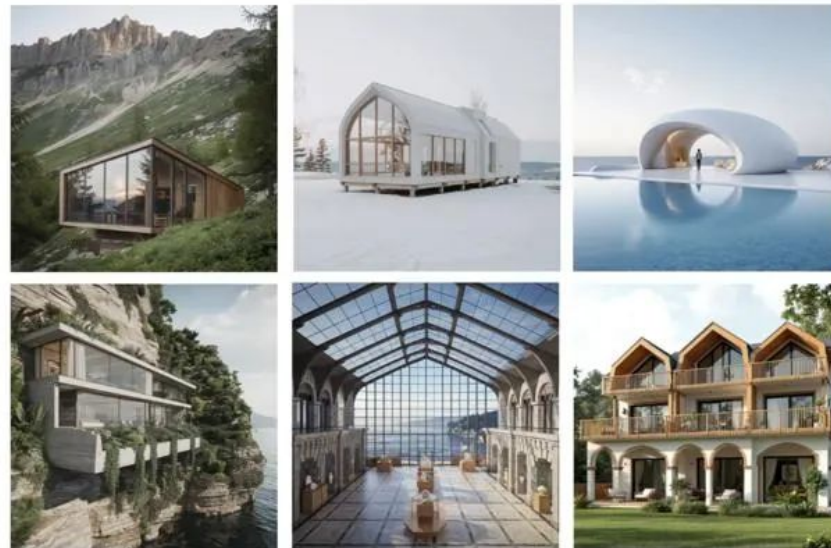
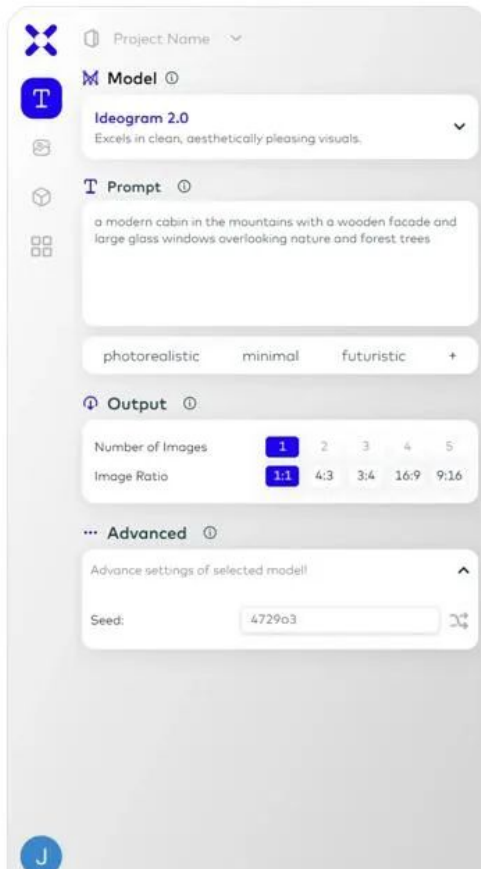
 **AUTODESK** Forma





SITE + BUILDING ANALYSIS







# ZERO-CARBON FUTURES

## MODEL INPUTS

### SITE GEOLOCATION

\_the brood museum, LA, USA  
41°24'12.2"N 2°10'26.5"E

### SELECTED SITE INPUT



## IMAGE PROCESSING

### TEXT INPUT

A sustainable building with a green roof and organic white timber cladding.

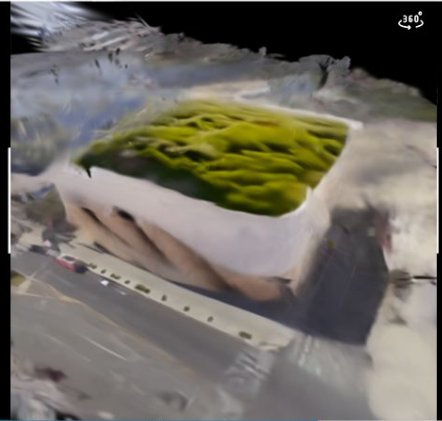
### VIDEO OUTPUTS



## 3D OUTPUT

### PROCESSING 3D MODEL...

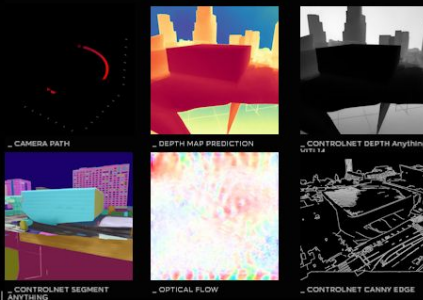
### 3D GAUSSIAN SPLAT



### SITE INTERVENTION



### MODEL PROCESSING



### IMAGE DESCRIPTIONS

(The image is a 3D model of a city, showcasing a large building with a grassy area on top of it. The building is situated in the middle of the city, surrounded by various other buildings. The cityscape is filled with trees, adding a touch of greenery to the urban environment. In addition to the buildings, there are several cars scattered throughout the scene, indicating the presence of traffic and transportation infrastructure. The overall view of the city is from an aerial perspective, providing a clear view of the architectural details and the layout of the urban landscape.)

### CAMERA POSE PREPROCESSOR

(The camera azimuth angle is 100 degrees, and the altitude angle is 90 degrees. The camera is located at a height of 100 meters above the ground, looking down at the cityscape and the large building.)

## ACADEMIC EXCHANGE

**PHASE 03**

# **TESTING NEW REALITIES**

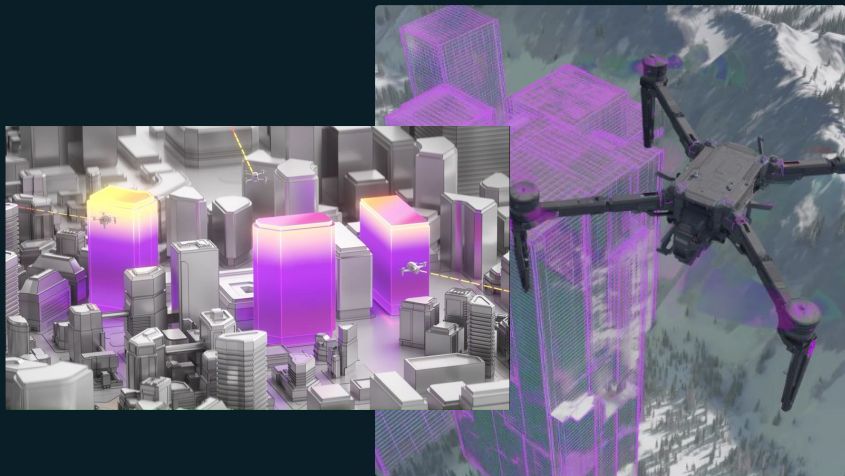
In this final phase, students translate their speculative design frameworks into [experiential test environments](#) using both immersive virtual reality simulations and physical prototyping at full or partial scale. VR environments (Unreal Engine, Twinmotion, Enscape, or similar platforms) allow students to evaluate spatial performance, proportion, circulation, sensory qualities, material perception, light behavior, and user experience from a first-person perspective. In parallel, students construct tangible prototype components—such as joints, modules, façade segments, material systems, spatial fragments, or assembly logic—to investigate material behavior, fabrication feasibility, and physical interaction of their selected topic.



# NEXT-GEN WORKFLOWS

# MOV.E Design Studio





### Autonomous Capture

Scan building enclosures using camera-equipped drones with thermal and regular imaging. This non-invasive approach captures comprehensive data across every surface, revealing conditions invisible to the human eye. We are the pioneers of Beyond Visual Line of Site (BVLOS) building inspection flights.



### AI Diagnostics

Root-causes anomalies, categorizes defect severity, and predicts failure patterns using proprietary AI trained on extensive building data. Our simulation models translate thermal signatures into actionable insights that indicate developing capital investment problems months before visible damage appears.



### Cloud Platform

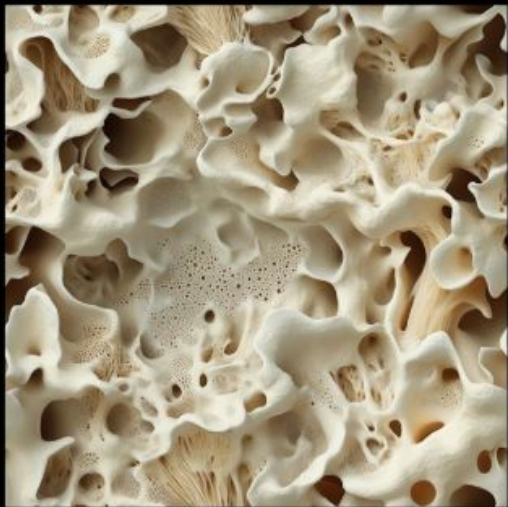
Receive 3D models with defects mapped, simulated energy impact assessments and ROI analysis, and prioritized solutions with design-ready statements of work for surgical retrofits. All existing buildings and new construction findings are documented for with precision for capital planning and contractor execution.



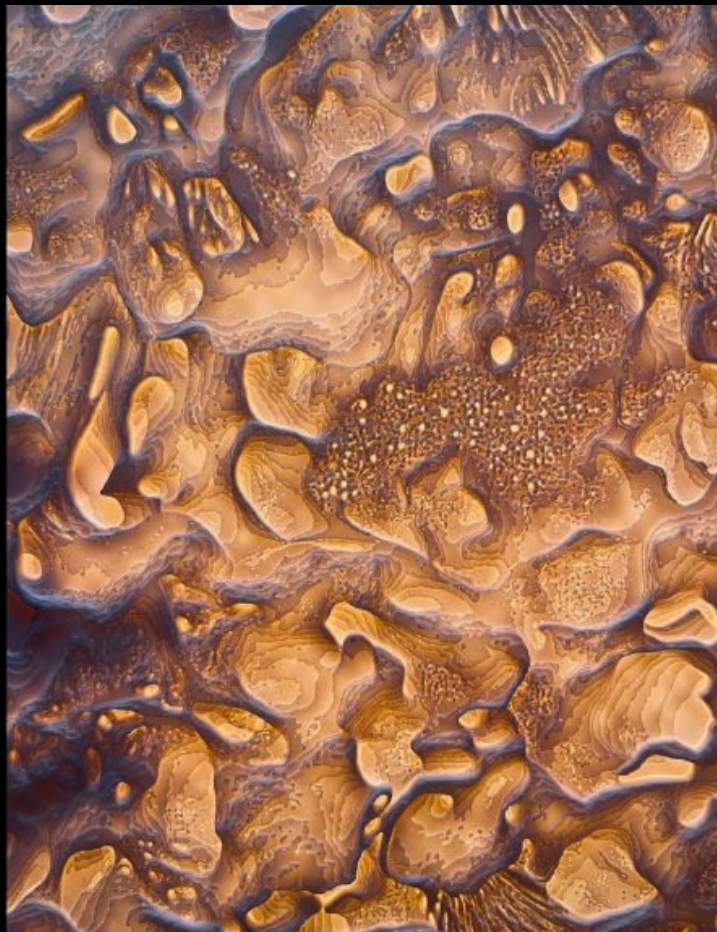
# NEXT-GEN MATERIALS

Edvard + ARUP





[Left] AI-Generated Mycelium Texture Map



[Right] PLA 3D Print with Displacement



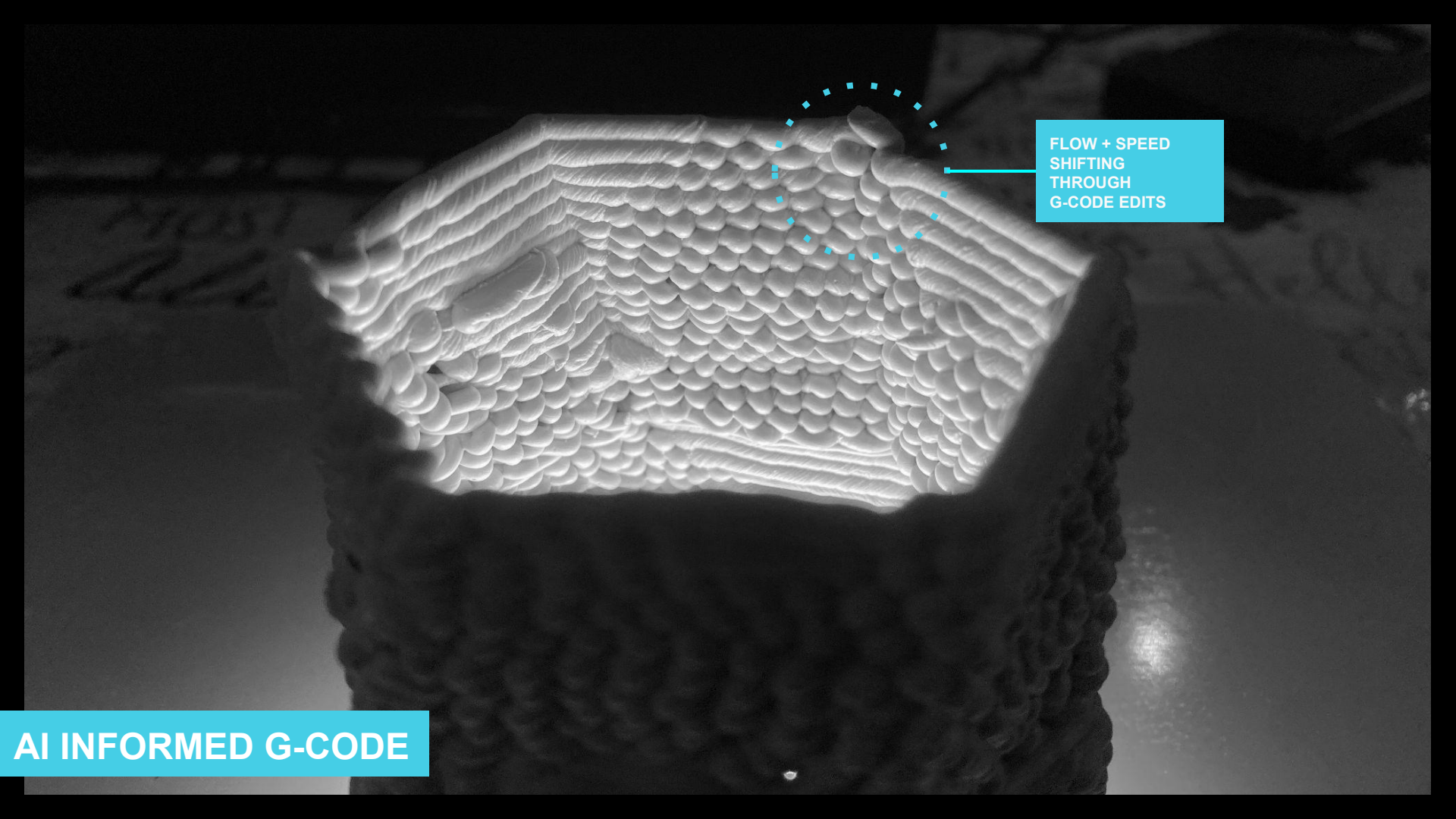




# NEXT-GEN ECOLOGIES

Urban Reef





FLOW + SPEED  
SHIFTING  
THROUGH  
G-CODE EDITS

AI INFORMED G-CODE



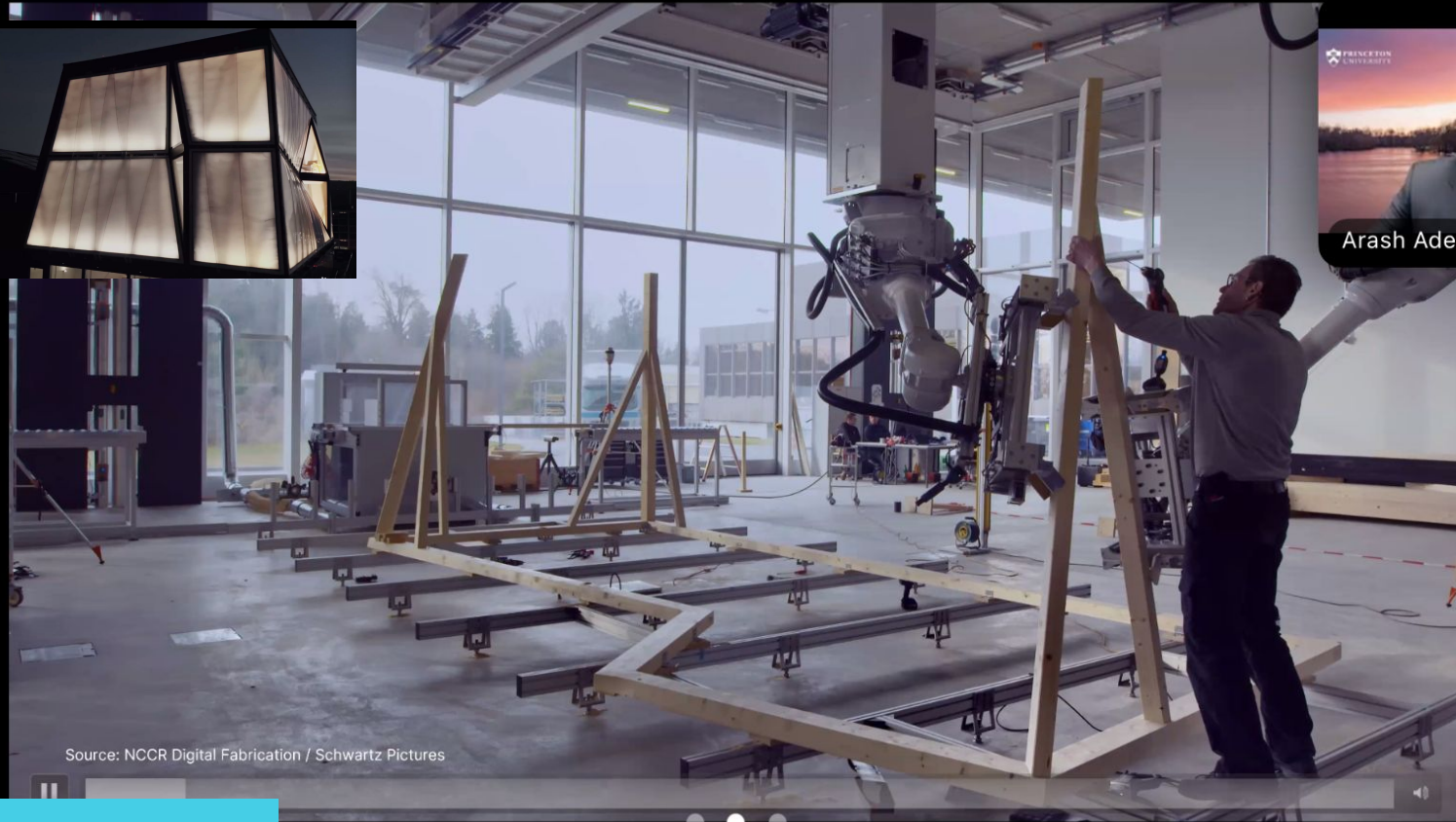




# NEXT-GEN STRUCTURES

Dr. Arash Adel (Princeton)



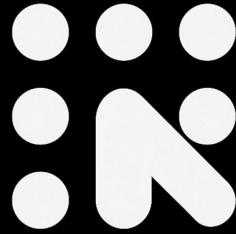


Arash Adel

Source: NCCR Digital Fabrication / Schwartz Pictures

Dr. Arash Adel

IMAGINE A  
**NEW** FUTURE



**NEXT-GEN**  
**ARCHITECT**

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