

# **Waffle-Structured Chair: Exploring Robotic Manufacturing in Design Education**

A team of DIA Master's students at Hochschule Anhalt explored computational design and robotic manufacturing by creating a full-scale, waffle-structured ergonomic chair, combining efficiency, ergonomics, and sustainability. Exhibited at Campus Fest 2025, the project showcased the potential of digital workflows and robotic fabrication in architectural education.

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# **Digital Shingles: Interactive Robotic Shingle Facade Assembly**

The project "Interactive Robotic Shingle Facade Assembly" explores how traditional Swiss woodcraft can be reimaged through digital technologies. This interactive installation invites visitors to customize shingle facade patterns via an intuitive interface and watch a robotic arm assemble their designs in real-time. The installation showcases the potential of robotics and parametric design to revive craftsmanship while promoting sustainable, adaptable architecture.

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# **NEXUS: From Machine Learning to Manufacturing**

NEXUS by ENCODE Studio explores the fusion of machine learning, generative design, and additive manufacturing to create intricate, morphing geometries showcased during Cairo Design Week. Using Rhino and Grasshopper, the team translated AI-generated patterns into full-scale 3D-printed architectural elements, redefining possibilities for design and fabrication.

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## **Shellscape Pavilion: Exploring Wood-Bioplastic Composites in Architecture**

The Shellscape Pavilion explores the architectural potential of waste-derived composites through a fully computational and robotic workflow. Developed as part of a PhD research project, this prototype demonstrates how circular materials, structural optimization, and mixed-reality assembly can converge in a full-scale architectural design.

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# Monumento Pijao Ancestral: A Father–Son Fusion of Art, Technology, and Heritage

The Monumento Pijao Ancestral in Tolima, Colombia, is a 13.6-meter steel sculpture created by artist Edgar Varón Oviedo and his son, industrial designer Edgar Daniel Varón Villarreal. Blending ancestral geometric patterns with advanced 3D modeling in Rhino and Grasshopper, the monument honors the Pijao people through a fusion of art, cultural heritage, and precision engineering.

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## Thinking in Code: First-Year Towers from Ain Shams University

First-year architecture students at Ain Shams University utilized Grasshopper to design and fabricate parametric towers, learning to think like system designers from day one. The course emphasized algorithmic logic, data structures, and generative workflows to build not just models, but design intelligence.

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# ShaperBay: A Browser-Based Platform for Custom Surfboard Design and Fabrication

ShaperBay is a browser-based platform that empowers users to design and export custom surfboards using parametric tools powered by Rhino and Grasshopper. Its standout Hollow Wood Structure (HWS) feature supports the fabrication of sustainable, high-performance wooden boards through laser-cut templates and intuitive digital workflows.

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# Bio Corallo: A New Biomaterial for Digital Craft and Architecture

Bio Corallo is a lightweight, bio-based ceramic composite developed by Ana Bridgewater that merges digital craft with ecological material research. Made from porcelain and tapioca starch, the project explores how computational design and sustainable thinking can reshape the future of lighting, architecture, and modular fabrication.

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# **Speculating Futures: DeNile's Vision for a Water-Adapted Egypt**

DeNile is a speculative design project by students at Coventry University Cairo that envisions adaptive futures for Egypt in response to rising sea levels. Through floating farms, vertical aquaculture, and digitally modeled hybrid systems, the project reimagines survival in a water-transformed landscape.

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## **Resonant Landscapes: Architecture in Tune with Sound and Place**

In Resonance, architect Diana Fox transforms Antwerp's Theatreplein into a public soundscape where architecture acts as both stage and instrument. The project explores how spatial form, acoustic tools, and nature converge to create a living theatre district.