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.

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.

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.

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.

Unroll, Design, Reroll:

Creating Ceramic Textures with Rhino

Jenna Richards developed a custom ceramic texture roller using Rhino’s modeling tools and 3D printing, transforming precise digital patterns into tactile clay impressions. The project explores the challenges of wrapping geometry around cylindrical forms and refining prints for hands-on ceramic use.

Pinko Takes Off: Parametric Retail Design at Rome Fiumicino Airport

At Rome Fiumicino Airport, Pinko’s new flagship store merges fashion and technology through a parametric design inspired by the brand’s signature patterns. Brought to life with robotic 3D printing using Rhino and Grasshopper, the space sets a new standard for sustainable, regulation-compliant retail architecture.

Pedorthic Information

Modeling: Revolutionizing Orthopedic Footwear with 3D Printing and Computational Design

Developed by footwear engineer Daniel Petcu, Pedorthic Information Modeling (PIM) revolutionizes the design of orthopedic footwear by combining parametric design principles with 3D printing. This innovative approach allows for fully customizable, functional, and stylish medical footwear, overcoming the limitations of traditional hand-made methods.