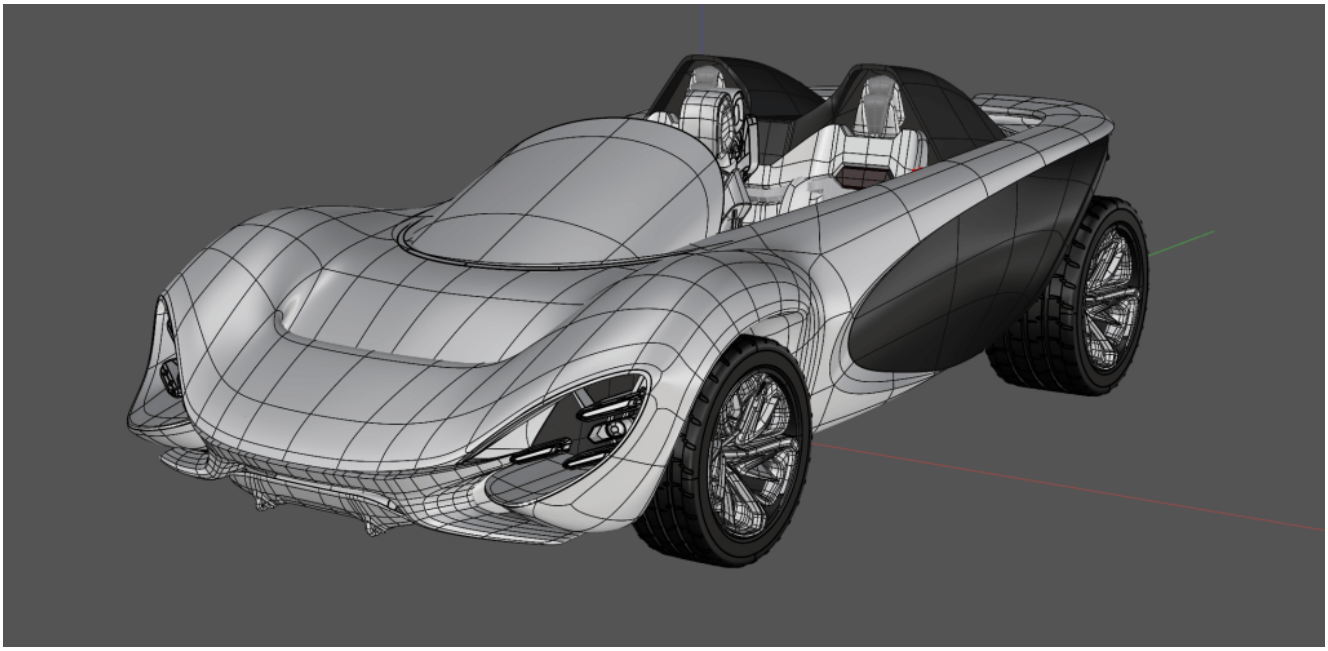
The Aether Concept Car's Revolution in Electric Vehicle Design

The Aether concept car project – developed by students from the Savannah College of Art and Design (SCAD) and led by car designer and professor of industrial design Rafael Corazza – is a bold innovation that combines cutting-edge automotive design, additive manufacturing, and computational modeling, tailored to resonate with Gen Z drivers. Aether is a full-scale, 3D-printed electric sports car that marries SCAD's design vision with industry-level craftsmanship.

From parametric interiors to dynamic exterior surfaces, the project encapsulates a forward-thinking approach that aligns with environmental consciousness, technology integration, and personalized aesthetics.

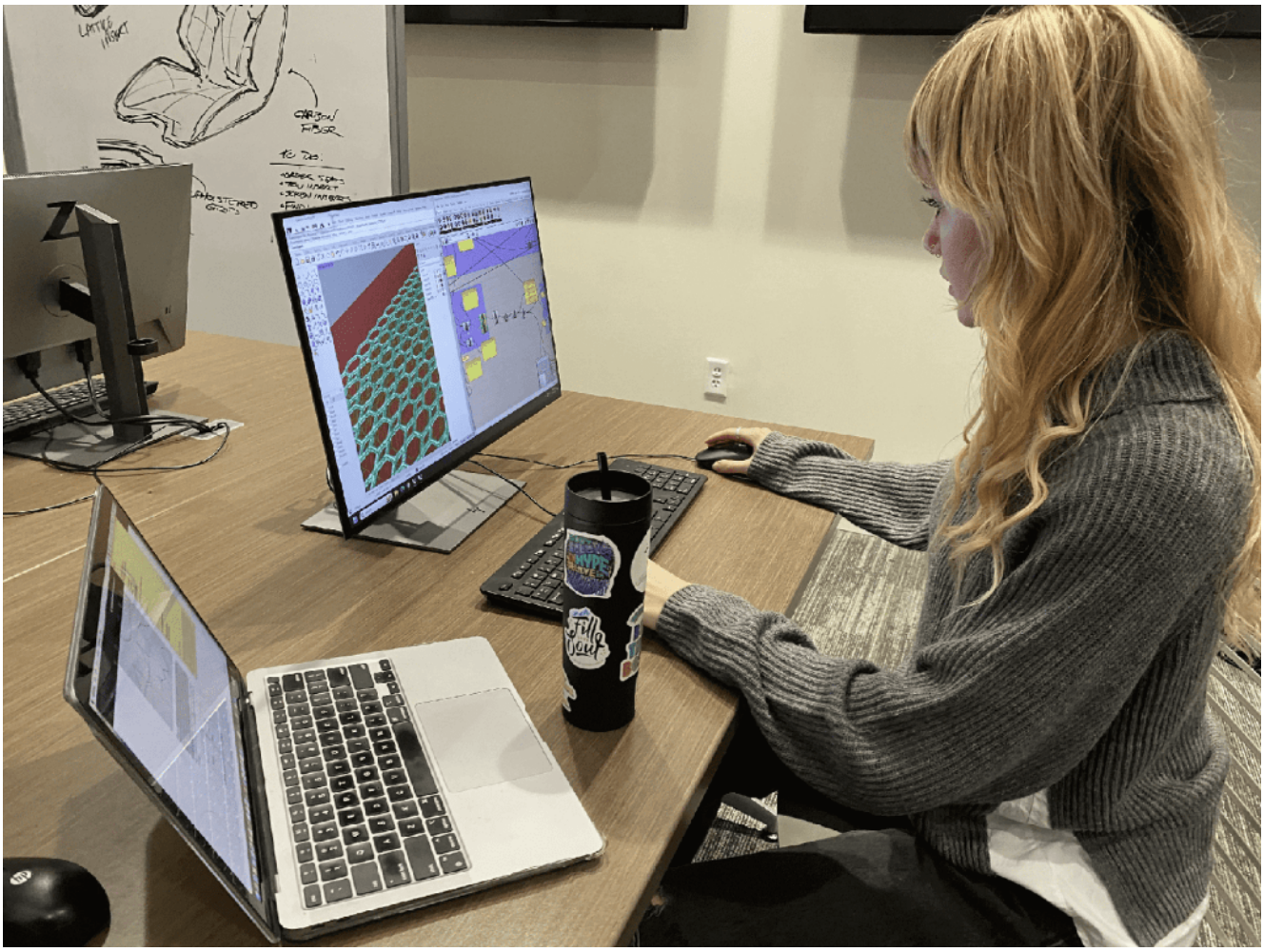


INTERIOR INNOVATIONS WITH ADDITIVE MANUFACTURING

Within the Aether's interior, the design team employed a variety of advanced techniques to produce unique, parametric elements. Grasshopper became a critical component in the design of a custom

lattice structure applied across three interior features: speaker covers, headrest accents, and seat cushions.

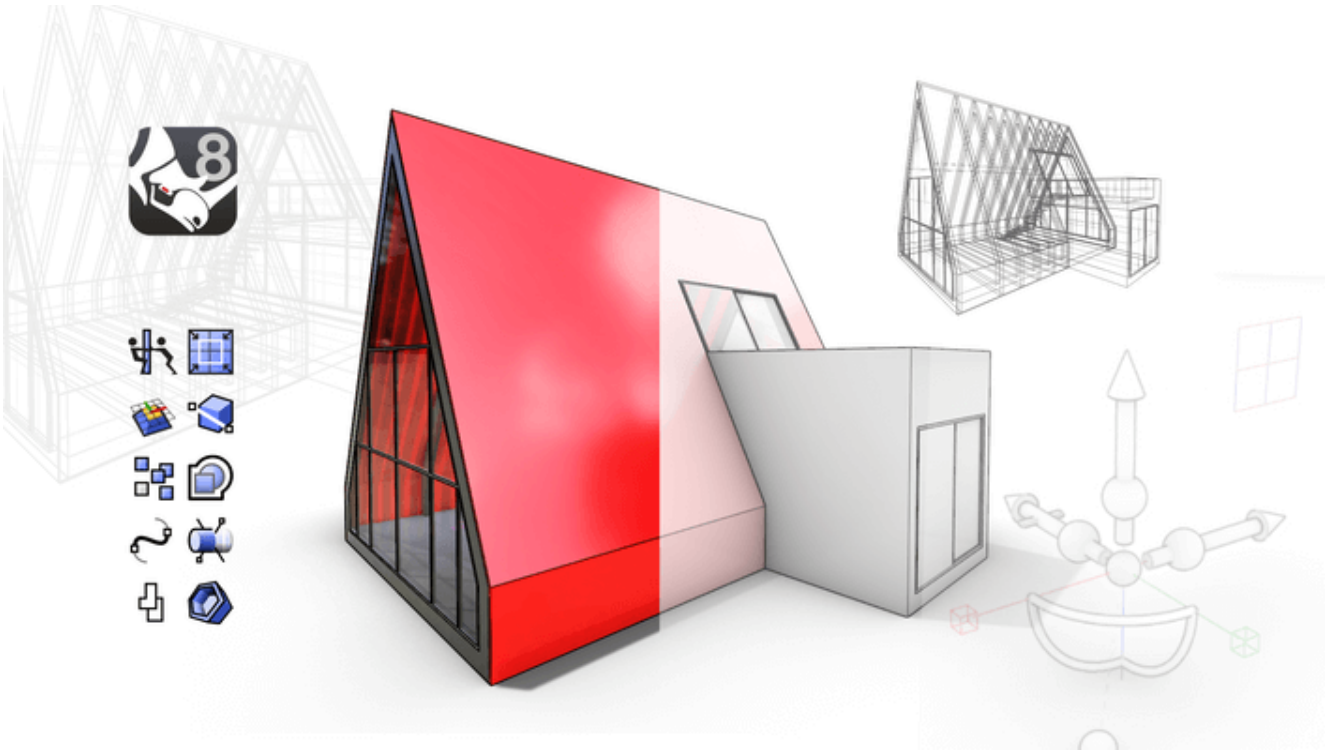
These features were constructed using BASF's TPU 88A, a thermoplastic polyurethane with excellent flexibility and structural resilience — ideal for parts that must endure stress without compromising elasticity. The lattice was produced via Multi-Jet Fusion (MJF), a form of powder bed 3D printing. This process allowed for precise, durable outputs necessary for complex interior components that also needed to meet aesthetic standards.



The interior modeling incorporated specialized Grasshopper plugins like Dendro for volumetric modeling and Pufferfish for transformations, enhancing the visual and functional aspects of the design. The flexible yet durable structure of the TPU material provides comfort and underscores the car's modern aesthetic and material exploration. SCAD Industrial Design major Lillian Brown, who served as the interior lead and computational designer, was pivotal in learning and applying these tools to create an ergonomic yet visually engaging cabin experience.

EXTERIOR DESIGN & 3D PRINTING CHALLENGES

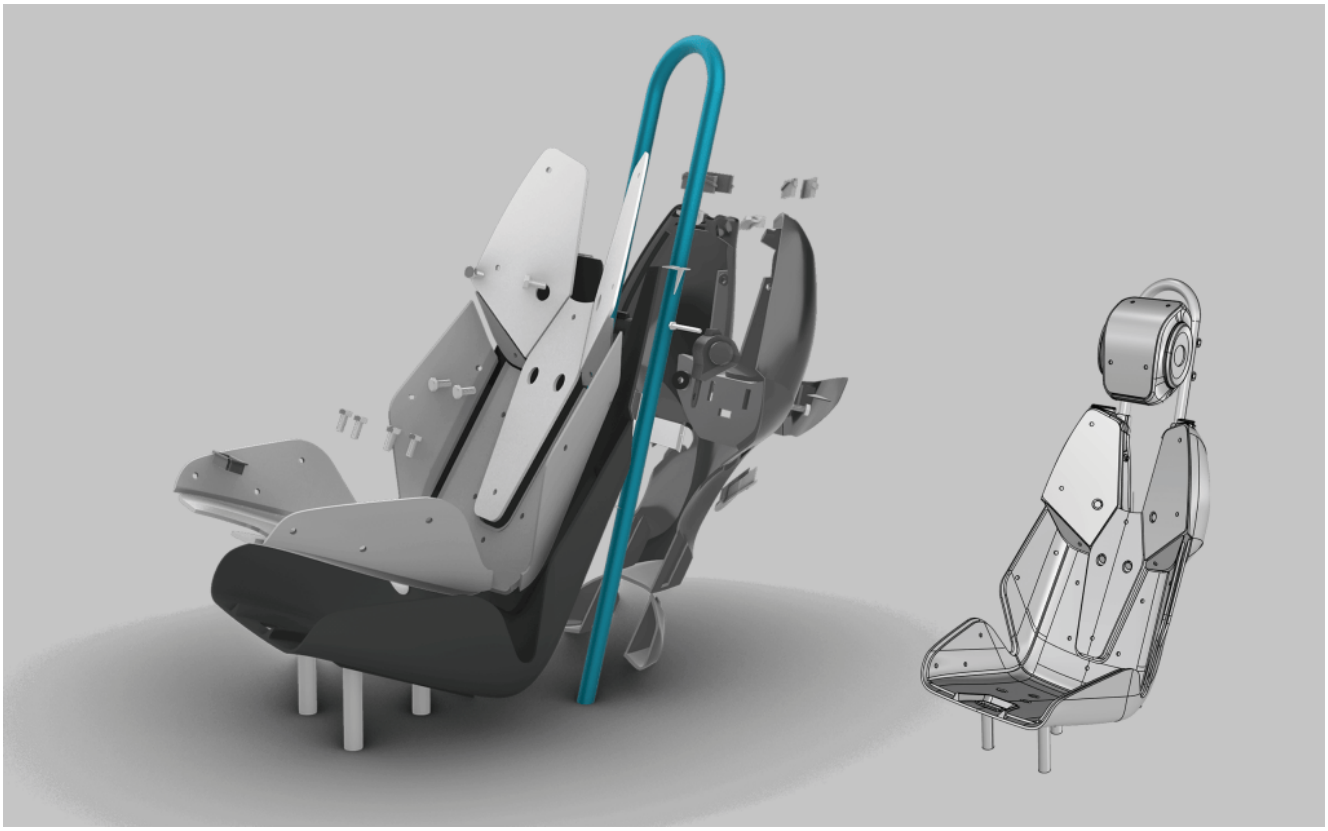
Aether's sleek exterior involved extensive use of Rhino 8, creating a blend of digital modeling and physical production through 3D printing. The team went through 15–20 iterations using SubD modeling in Rhino to achieve a distinct look, allowing for rapid adjustments while adhering to a strict timeline. The finalized design included transparent hexagonal-patterned panels, initially developed with IGES geometry in Rhino.



See Also

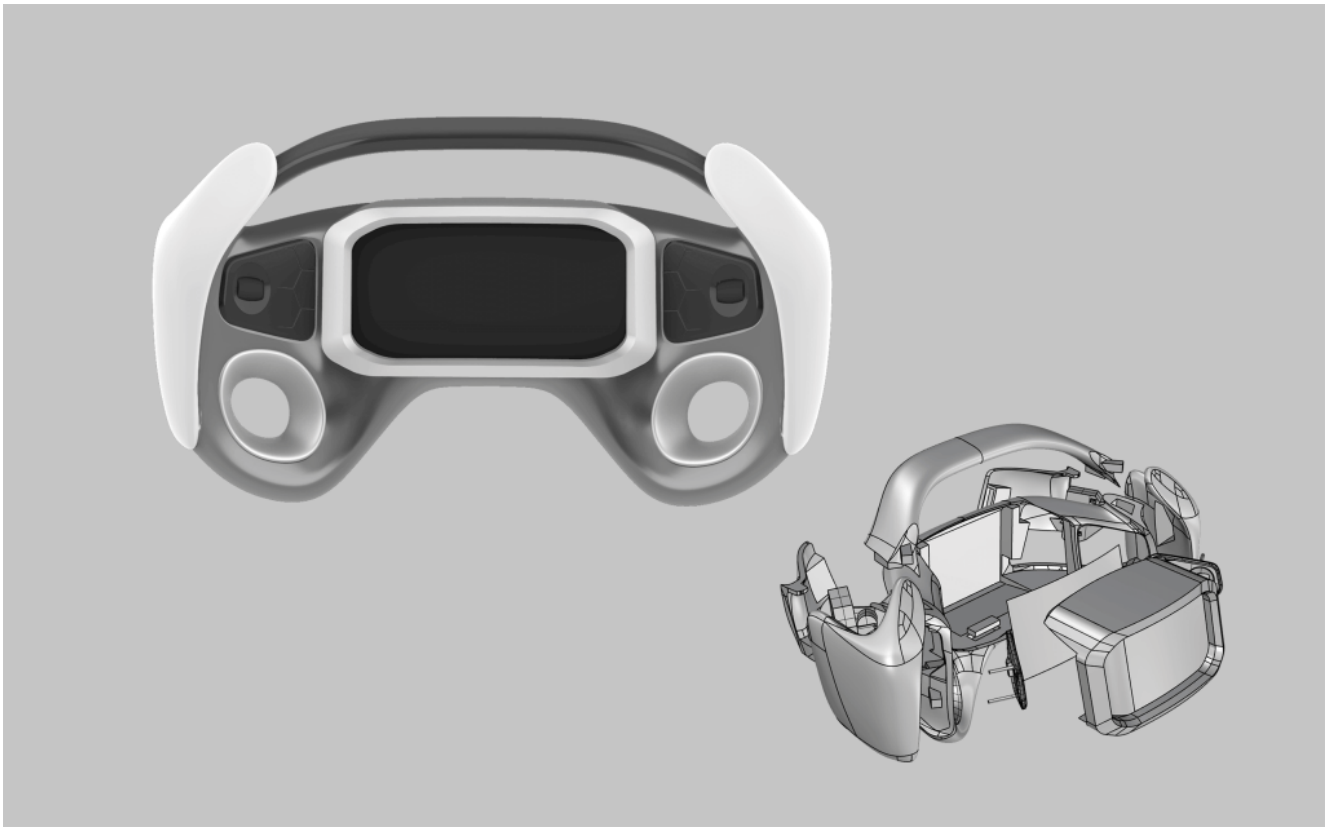
INTRODUCTION TO RHINO 8

Despite challenges with offsets and jointing the hexagonal elements to ensure printability, the team persisted, eventually opting for a simplified extrusion to expedite production. The main exterior panels, printed on a large scale 3D printer using UV curated acrylic gel, were designed with wall thicknesses between 4–6 mm, ensuring durability without excessive material use.

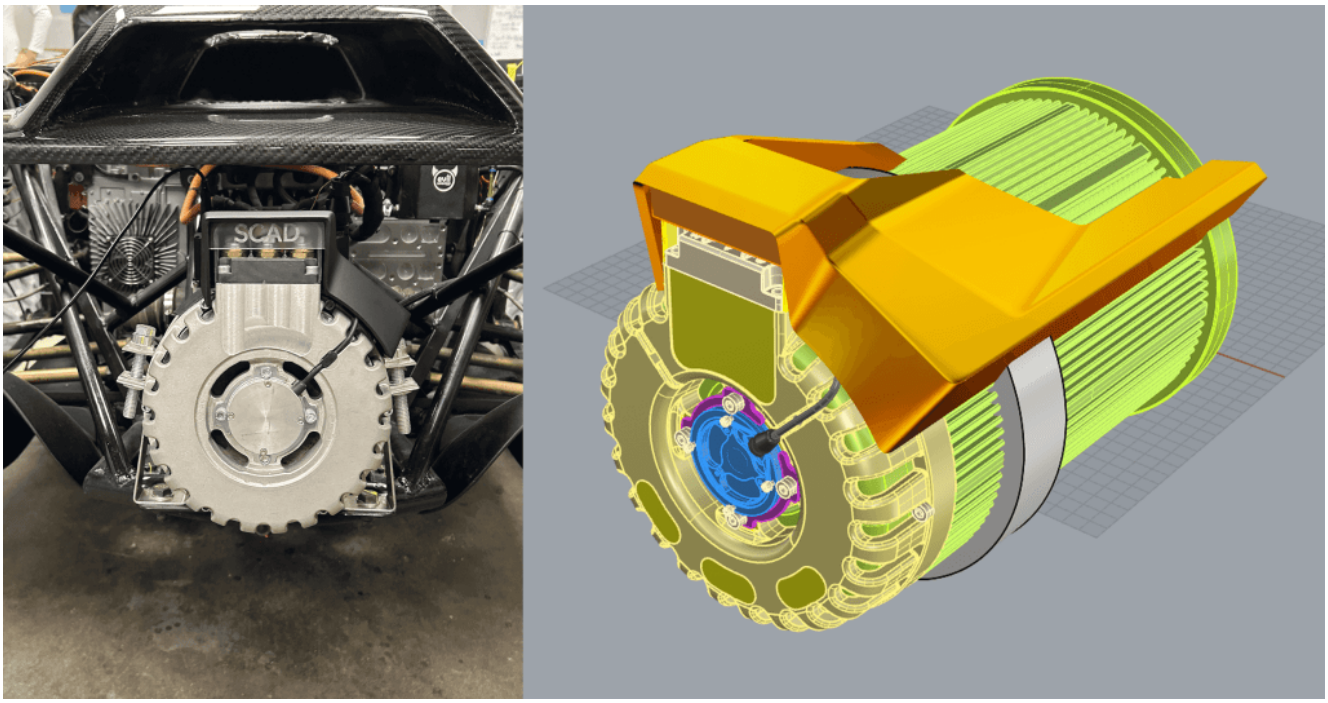


LIGHTING ELEMENTS & MATERIAL USE

The lighting design was another hallmark of Aether’s unique aesthetic. The tail lights, modeled in Rhino NURBS, featured intricate “Z”-shaped crystal structures, symbolizing the project’s forward-looking ethos. Each hexagonal detail within the tail light crystals was carefully extruded to achieve visual depth and maintain cohesion with the car’s design language.



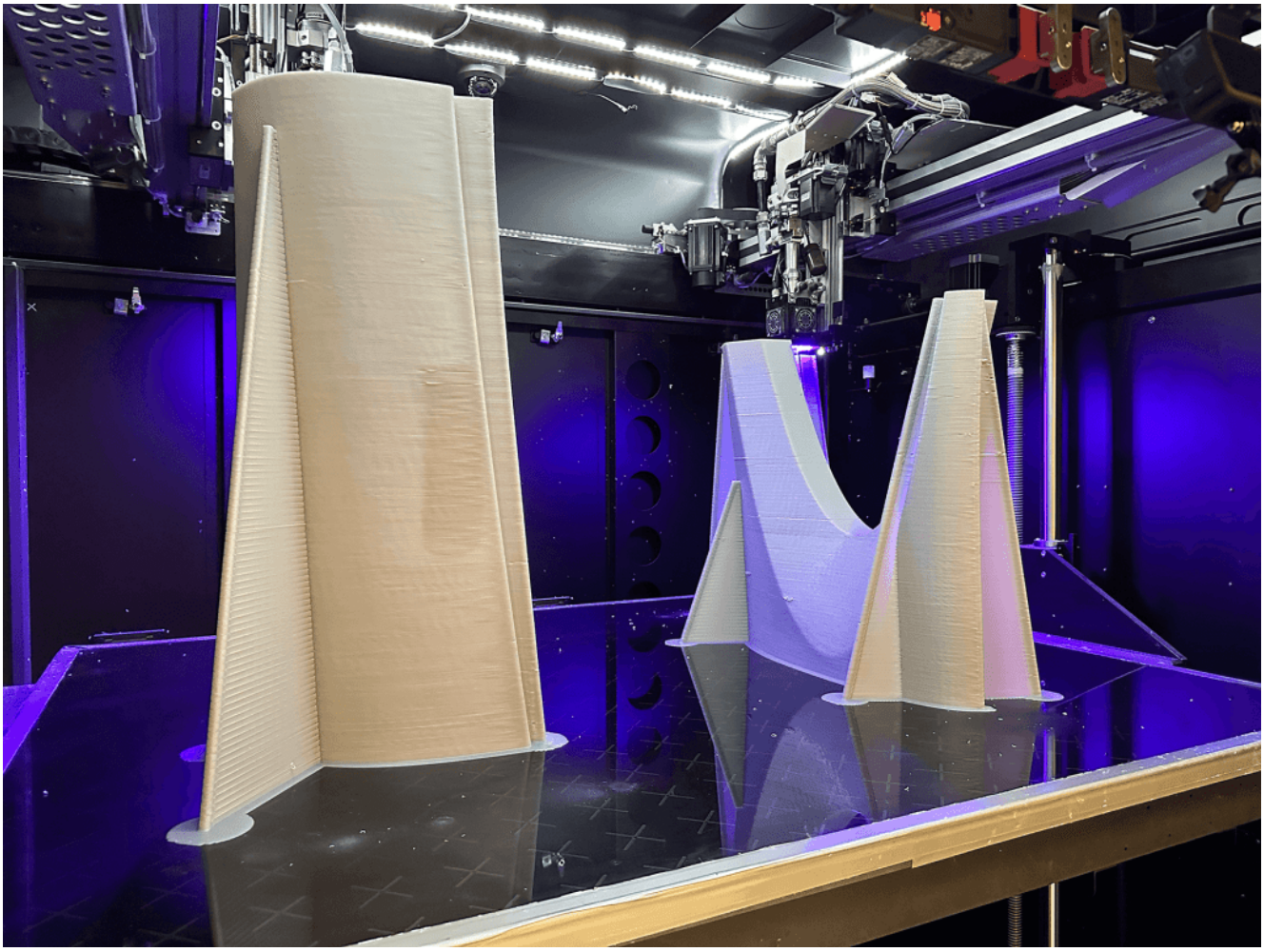
The headlight system combined SubD modeling for smooth surface transitions and NURBS for precision in slots and tolerances, facilitating secure mounting and a sleek integration into the front bumper.



SPECIALIZED COMPONENTS & SURFACE REFINEMENT

Additional design elements, such as the steering wheel, exposed motor covers, and a retractable seatbelt-equipped front seat, showcased the team’s dedication to functional, innovative design.

The steering wheel underwent iterative adjustments using Rhino’s SubD tools, with rapid prototyping allowing immediate visual feedback. Once the outer form was solidified, it was converted to NURBS to incorporate internal assemblies, such as buttons and a screen.



The Aether project also benefited from close collaboration with industry professionals. For the seating, SCAD alum Paul Hawkins of Flying Cow Upholstery shared insights on upholstery design, which informed the detailed NURBS modeling of the seat core and the clamshell rear structure.

TRANSFORMATIVE LEARNING EXPERIENCE AT SCAD

Through a year-long development process, Aether emerged as both a remarkable design achievement and a testament to SCAD’s unique educational approach.

Photography Courtesy of SCAD

By immersing students in practical, industry-relevant projects, SCAD empowers them to navigate complex technical and creative challenges, preparing them for careers where design and technology intersect. This experience underscored SCAD’s commitment to cultivating the next generation of designers equipped to reshape the future of automotive design and beyond.

CREDITS

Students

Willem Ballard – Interior + Exterior Digital Sculptor
Lillian Brown – Interior Lead + Computational Designer
Andrew Appezzato – CAD Lead + Exterior Digital Sculptor
Mireya Martin – Project Manager + Interior Digital Sculptor
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Benjamin Hamman – Digital Sculptor
Luca Journey Shaw – Digital Sculptor
Sam Merrill – Manufacturing Lead
Ronojit Bhowmik- Fabrication Lead
Sam Dittrich – Manufacturing

Jeremy Takyi – Project Lead
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Kamakhya Arora – Interior designer
Ala Killen – Interior designer, upholstery
Meredith Parker – CMF Lead, Interior

Professors
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JR Neville Songwe
John Morris
Jeehoon Shin

Abhinay Lal – Initial Teaching Assistant/ 3D render consultant
Sheroy Balsara – Teaching Assistant/ Exterior Rhino modeler

Industry Professionals
Colin Westeinde – Computational Designer at Apple Inc.
Chris McCormick – Hatch Exhibits

Institutions
SCAD
CAMAL Studio (Alessandro Camorali and team)