

Rhinozine

3D

NOVEMBER
2023

**V2 Marine Design:
Transforming
Marine CFD with
Orca3D**

Kerf Fabric: Lucerne
University students use
innovative tools for a
unique meeting
box project

Discover
PAZ Academy
to empower
your design potential

**Revolutionizing
Climbing Wall Design with
Computational Workflows**

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*All products are shipped electronically. Prices include support and service releases for the current version. There are no maintenance fees.

Image by Kyle Houchens

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food4Rhino

Learn about RhinoCAM and Parakeet.



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V2 Marine Design: Revolutionizing Marine CFD with Orca3D

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Tips, Tricks, & resources about Grasshopper

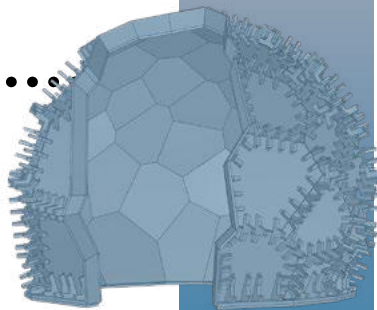
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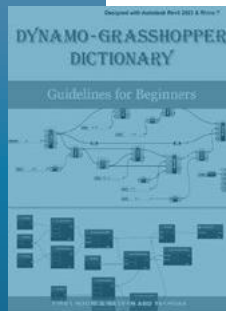
Lucerne University students use innovative tools for a unique meeting box project.



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Rhino^{3D}zine

**Share your knowledge.
Expand your network.
Connect with fellow enthusiasts.**

Ready to be featured in Rhinozine? Don't hesitate – click **HERE and send us your application today!**

If you're eager to showcase your latest project, share a groundbreaking plugin, promote courses and events, recommend must-read books, or offer exciting job opportunities, we want to hear from you. Your expertise and insights could inspire our diverse readership!



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In the Cover:

The Award-Winning Sterk 31

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Corrections: -



food4Rhino

Apps for Rhino and Grasshopper

The food4Rhino web site has many apps for Rhino and Grasshopper.

It's a mix of plugins for many, many applications.

Popular apps you can find here:



LunchBox



Ladybug Tools



Kangaroo



Pufferfish



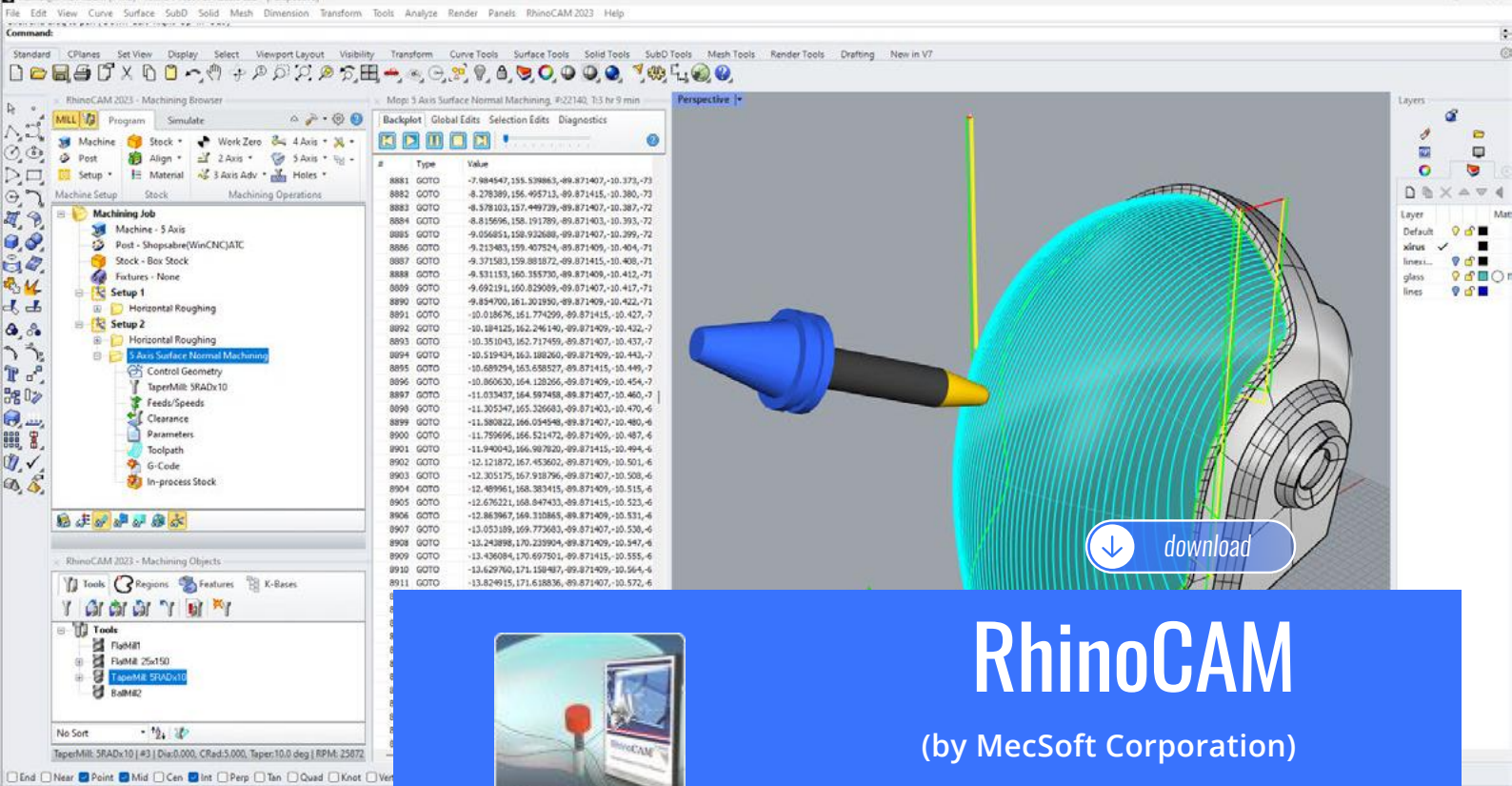
PanelingTools



GhPython

Check it out!

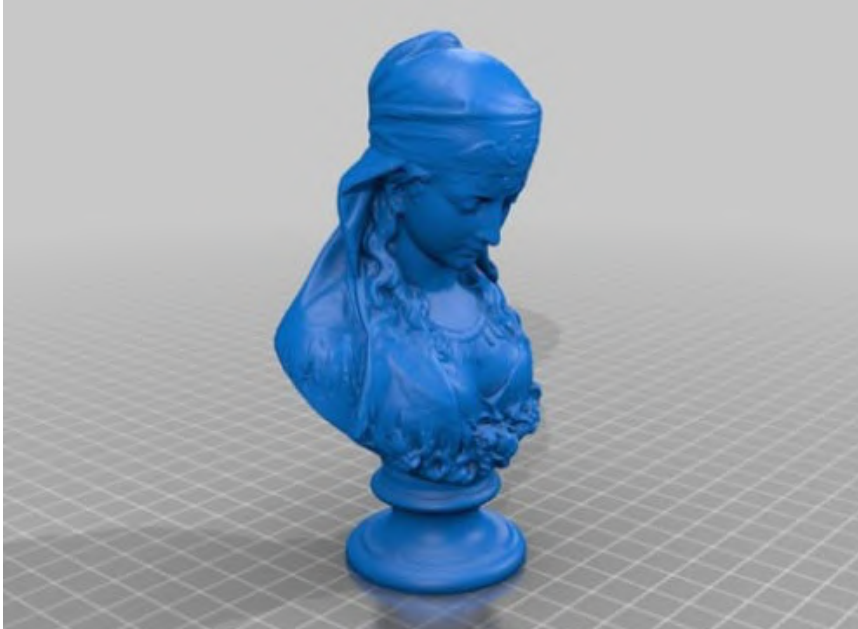
www.food4rhino.com



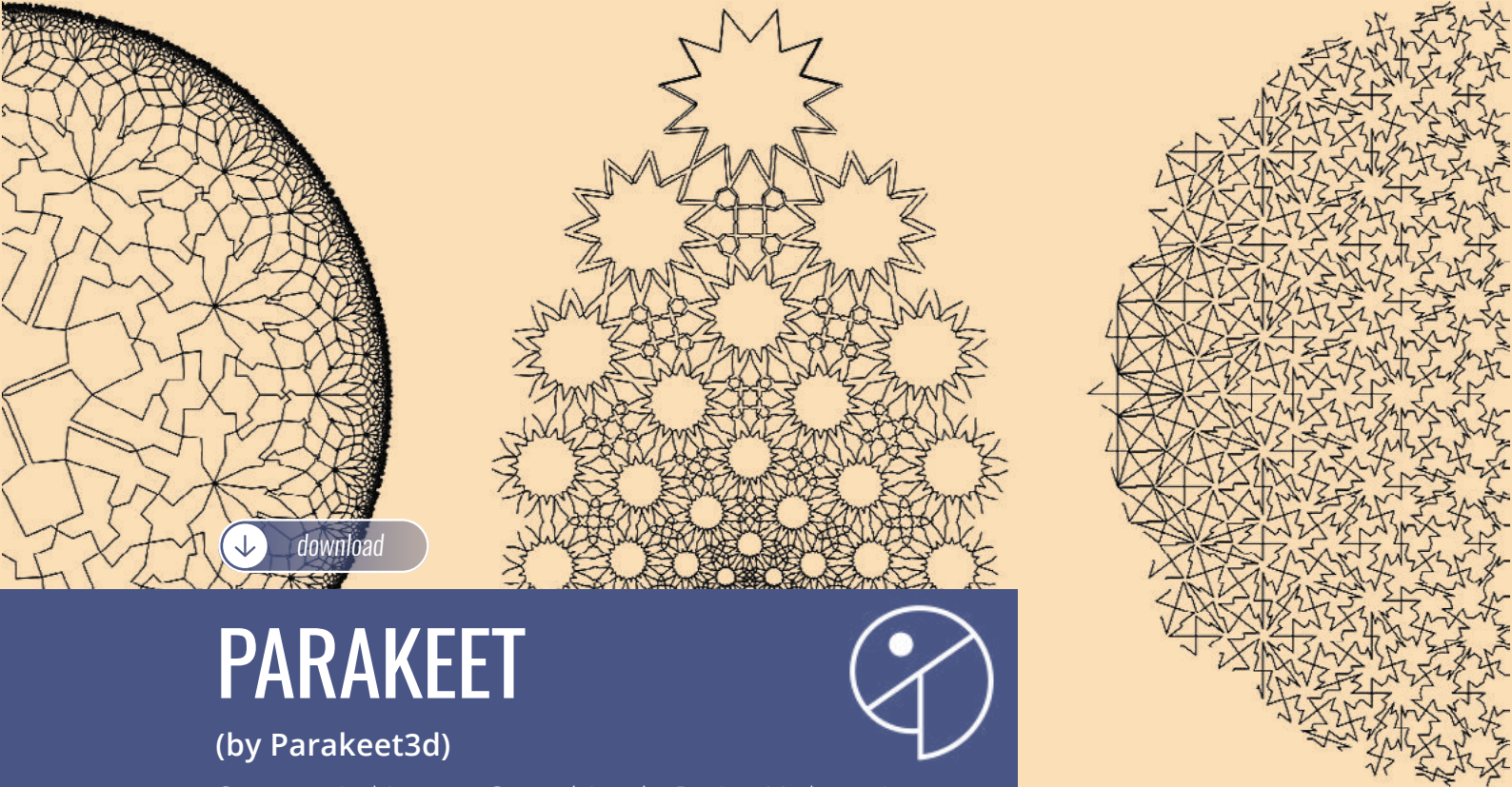
RhinoCAM
 (by MecSoft Corporation)
 Category: CAM

Unlock the full potential of your CNC manufacturing with RhinoCAM.

This CAM Software plug-in exclusive to Rhinoceros 6.0 & 7.0 on Windows is a game-changer in the world of Computer-Aided Manufacturing. It harmoniously combines the flexibility of Rhino's freeform modeling with the robust CAM capabilities of VisualCAM, delivering an unmatched powerhouse of functionality. When crafting CNC programs, the seamless integration makes working with RhinoCAM feel like an extension of Rhino itself.



RhinoCAM boasts full associativity to Rhino's geometry changes, ensuring that your designs remain effortlessly adaptable. The software offers a comprehensive set of modules, including MILL for CNC milling, TURN for CNC turning, NEST for efficient part nesting on sheets, MESH for handling mesh geometry, and ART, which lets you generate CAM geometry from artwork. With RhinoCAM, your CNC manufacturing workflow reaches new levels of precision, convenience, and creativity.



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PARAKEET

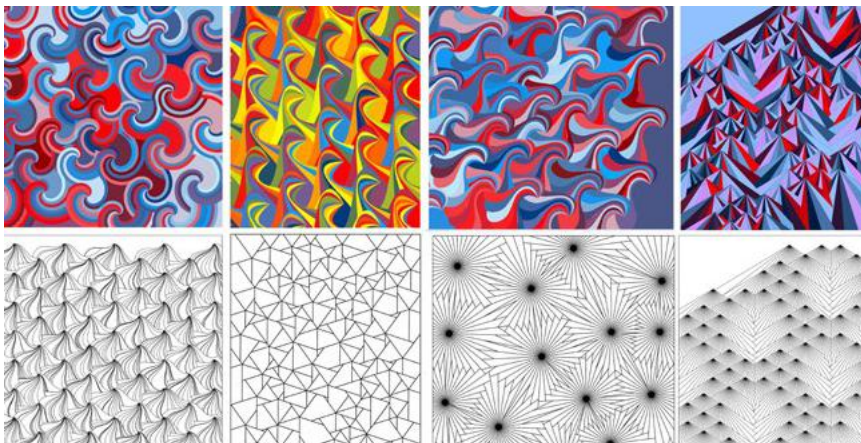
(by Parakeet3d)

Category: Architecture, General, Jewelry Design, Mathematics, Panels and Rationalization



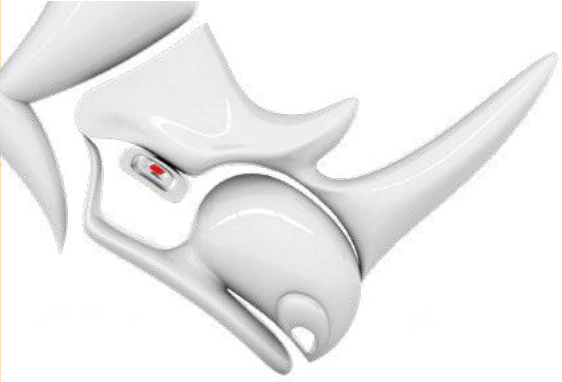
By delving into the core logic of morphological processes, Parakeet empowers designers to generate intricate ornamental designs as well as modern architectural patterns. The software seamlessly integrates with Grasshopper3D® and provides methods to generate biomimetic patterns and geometrical processes. In response to the escalating complexity of design projects, Parakeet3D embraces advanced data structures and ensures a harmonious blend of user-

Parakeet3D is a versatile cross-platform design tool that deciphers and reimagines traditional geometric patterns.



Gilbert Tessellation

friendliness and intervention flexibility. Through algorithmic thinking, it revamps pattern generation techniques, bridging the gap between historical craftsmanship and modern computational design. Parakeet3D serves as a valuable tool for designers, simplifying the process of generating, visualizing, and assessing designs - all within a comprehensive algorithmic framework and across various design disciplines.



Tips & Tricks

Elevate Your Rhino Game: Think you know it all? Click now and unravel a collection of game-changing tips & tricks!

MRU Tool Bar Button Sidebar

Last used buttons
Rhino 6+

Set Dimension Layer
Rhino 7+

Linked viewports
Rhino 6+

Single viewport mode
Rhino 7+

Named Selections
Rhino 7+

Two calculators
Rhino 4+

File Edit View Curve Mesh Dimension Transform Tools Analyze Render Panels Help
Next point of polyline
Next point of polyline
Next point of polyli
Standard CPlan
Dynamic redraw
Frames per second:
Viewport properties
 Linked viewports
 Single-click maximize
 Wrap cursor at viewp
Default 35mm camer
Perspective
Layers
Layer
Default
Named Selections
Save Named Selection
Save named selection as:
Selection.01
OK
Perspective Top Front Right
 End Near Point Mid Cen Int Perp Tan Quad Knot Vertex Project Disable
CPlane x 72.198 v 34.181 z 0.000 47.750 mm ■ Default Grid Snar:Ortho Planar:Osnap SmartTracI GumbalRecord HistorFilter

V2 Marine Design: Revolutionizing Marine CFD with Orca3D



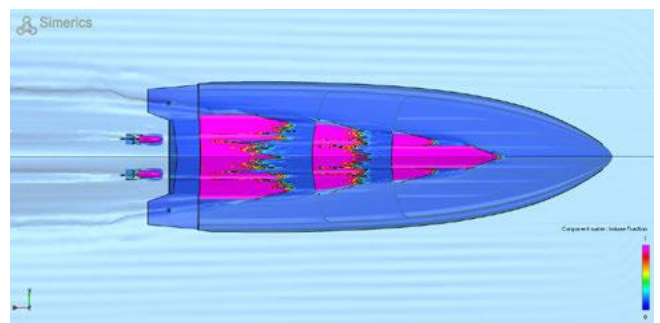
The integration of Computational Fluid Dynamics (CFD) into small design offices has been a game-changer for the marine industry. V2 Marine Design, led by Sasha Vlad in Latvia, is a shining example of this evolution. Traditionally, CFD was a costly and technically demanding process, but with the advent of user-friendly software like Orca3D Marine CFD, the barriers have crumbled, making it accessible for solo designers to evaluate and refine their creations.

Sasha Vlad's extensive journey from Romania to South Africa, New Zealand, England, and finally, Latvia has armed him with a diverse set of skills and experiences. He acquired knowledge in traditional wooden boatbuilding in New Zealand and earned a degree in Naval Architecture in Southampton, UK. His career took him through luxury yacht design and high-grade military spec boats, enriching his treasure chest of knowledge.

Although Vlad has a deep-seated passion for sailing, he realized that the powerboat market offered greater opportunities and potential for his



The Award-Winning Sterk 31 benefits from CFD analysis.



A view from below of a 60 knot CFD run. The purple areas are wet, the blue is dry and the intermediate colours are a mixture of air and water. The benefit of the steps in removing wetted area from the hull is evident.

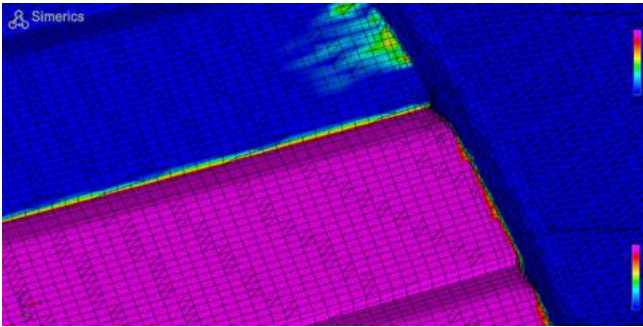
work. This shift led him into the world of powerboat design, setting the stage for a remarkable journey.

His early projects featured hull shapes with no steps, which he considered "low risk." However, it was his 30-foot boat project for Canelli Yachts that pushed him to explore CFD. The design brief was ambitious, demanding a fast, stunning boat with no restrictions. To achieve this, Vlad needed technical assistance for the addition of steps to the hull, which led him to Bruce Hays at Orca3D Marine CFD.

Vlad acquired his first license for Orca3D Marine CFD, equipping himself with a

computer setup that could handle the significant data generated during a CFD run. Orca3D's template architecture and integration into Rhino3D streamlined the process, making it accessible even for those who weren't CFD experts.

The CFD analysis process extended beyond the hull, creating a 3D domain to assess fluid behavior. Vlad's preference



The CFD mesh detail on the strakes and aft end of the step. The automatically defined mesh parameters are one of the time saving features of Orca3D Marine CFD.

for approximately 20 million cells in the mesh led to 14-hour runs, an investment he believes is worth it when compared to the lengthy modifications required if the design isn't right.

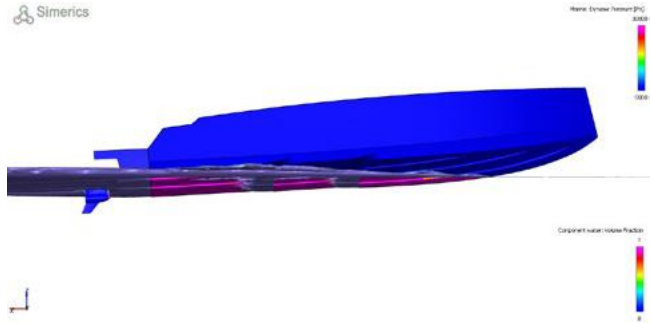
Vlad's design philosophy involves a division of labor with his long-time partner, Carlos Vidal, who takes care of the topside aesthetics and functionality. This collaboration allows Vlad to focus on the performance and handling of the boats.



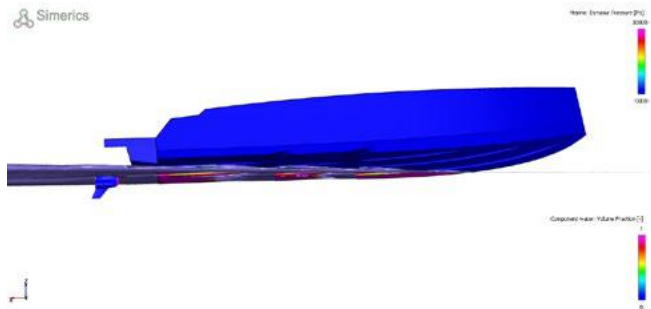
A Rhino3D rendering of the inverted hull shows the step and strake configuration.

In the past, Vlad relied more on experience and intuition in his designs.

CFD analysis has since empowered him to create innovative shapes with confidence, offering significant advances compared to the slow, evolutionary changes of the past. The Sterk 31 serves as a prime example of the remarkable progress he has achieved with CFD.



CFD accurately predicts the running attitude of the boat. An image at 30 knots (above) and 60 knots (below).



In conclusion, Sasha Vlad's journey from diverse experiences and locations has culminated in V2 Marine Design's outstanding work. The incorporation of Orca3D Marine CFD has revolutionized the design process, allowing him to explore new possibilities and confidently create groundbreaking powerboat designs.

Read Vlad's full success story [HERE!](#)



Learning

Discover PAZ Academy Parametric Academy Zurich

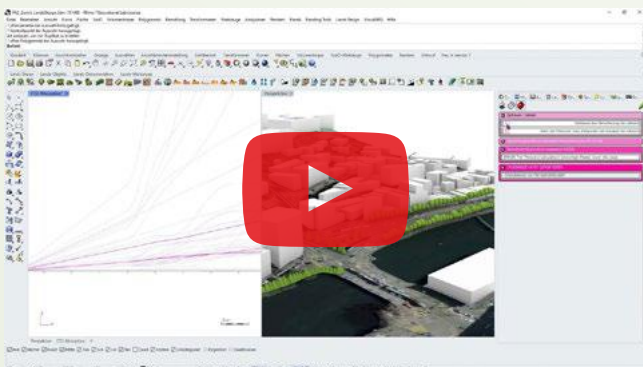
PAZ Academy's mission is to unlock the potential of advanced design technologies, enabling you to focus on your true passions. Whether you're seeking profitability, precision, creativity, or inspiration, they're here to help you achieve it all.

As computational designers with extensive experience in large-scale projects like airports, ports, stadiums, and intricate rehabilitation efforts, they are well-versed in all visual scripting languages. PAZ Academy breaks free from the constraints of traditional BIM and CAD software, emphasizing your ideas, logic, and enthusiasm.

Their approach is unique, drawing inspiration from your processes while blending in their own experience and expertise. They offer top-notch courses and personalized services for individuals and offices, both online and in-person. Explore their upcoming courses, and join them on an exciting design adventure.

Lands Design Course

Nov 29, 08:30 - 17:00 at PAZ Central



Participate in the **LandsDesign** workshop, where you'll explore the future of landscape architecture. Experience the flexibility of BIM (Building Information Modeling) and the power of parametric design, all in an open BIM environment with a vast database that encourages collaboration and innovation. LandsDesign is not just an advanced tool, but a cost-effective solution that redefines efficiency and creativity in the landscape sector.

Rhino.Inside.Cadwork

Dec 1, 08:30 - 17:00 at PAZ Central

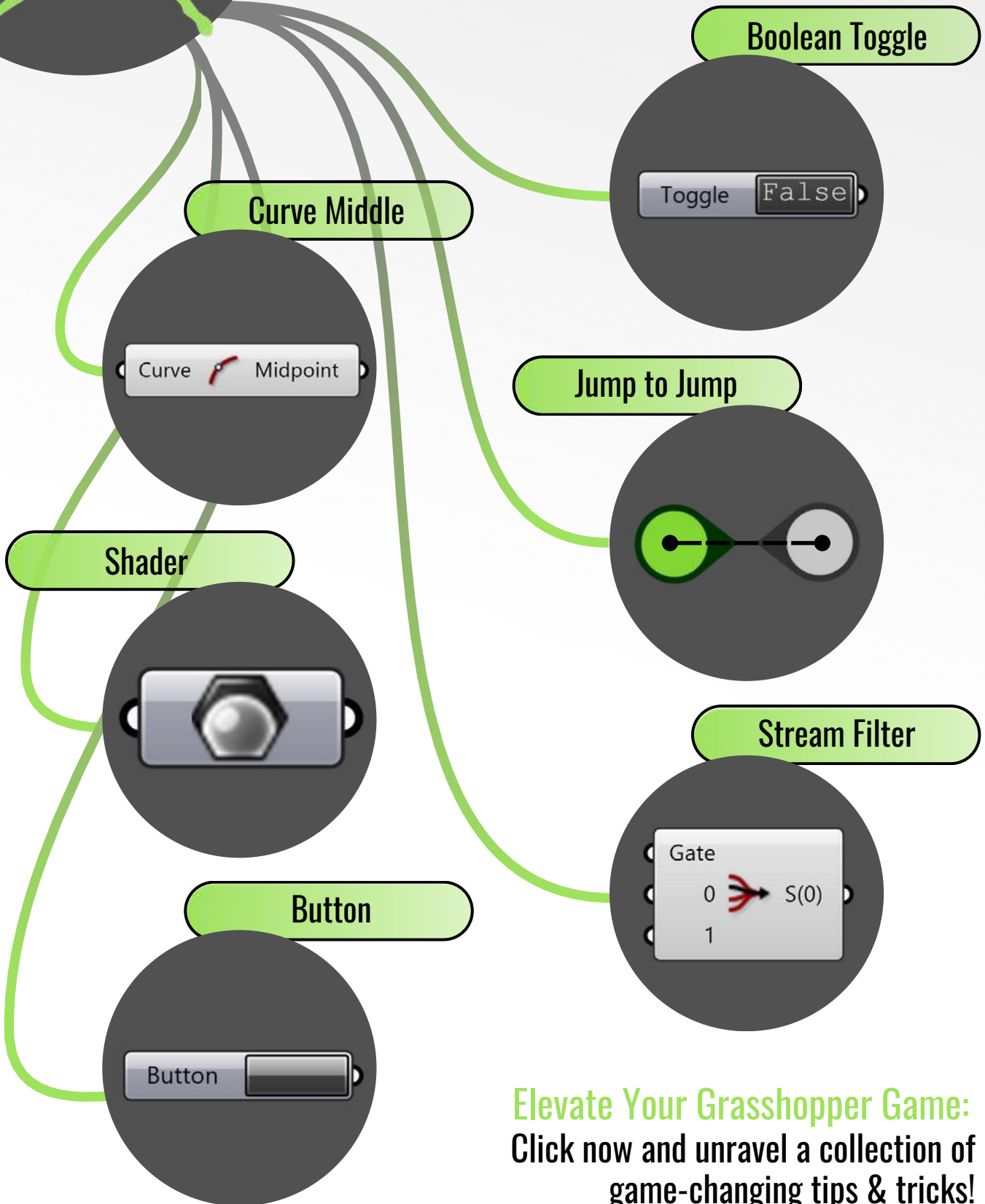


Uncover design and production potentials in our **Cadwork** workshop with **Rhino**. **Inside Cadwork**, blending Rhino 7's flexible NURBS with Cadwork 3D's robust production capabilities. This fusion smoothens the design-to-fabrication transition, elevating efficiency and expanding creative boundaries. A realm of enhanced design exploration and execution awaits!

Explore the full course catalog, available both online and onsite!



Tips, Tricks & resources about Grasshopper



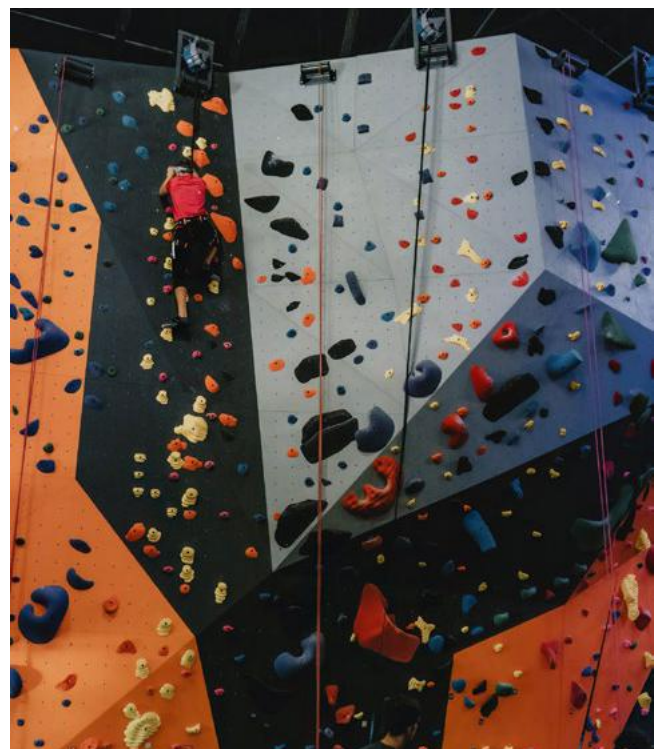
Elevate Your Grasshopper Game:
Click now and unravel a collection of
game-changing tips & tricks!

Revolutionizing Climbing Wall Design with Computational Workflows

This design journey commences with a vision, a spark of inspiration captured in a schematic model. However, the true alchemy unfolds when this vision metamorphoses into a tangible 3D reality. Geometric optimization, a process that aligns the climbing wall's design with human movement, plays a crucial role. Standard miter angles, honed by Mario, are selected, ensuring both aesthetics and CNC milling feasibility.

Yet, the optimization journey doesn't stop at geometry. It extends to panelization, where the climbing wall is deconstructed into manageable components, each fitting snugly within the confines of a standard 4'x8' plywood or fiberglass sheet. This strategy isn't

*Climbing walls have transcended their traditional role as recreational structures, emerging as fertile ground for architectural innovation driven by computational design. This transformation is the fruit of a collaborative synergy between **Outdoor Escape**, **Protolab Architects**, and a visionary Computational Designer, **Mario A. Medina Vilela**, who is pioneering new horizons in the field. His toolbox of choice, **Rhino**, and **Grasshopper**, forms the backbone of this venture, breathing new life into climbing wall construction.*



solely a material efficiency exercise; it's an architectural feat that defies the constraints of wall shape — a testament to Mario's computational ingenuity.

correct installation, a detail perfected by Mario. Comprehensive diagrams offer a visual guide for efficient CNC milling, reducing errors, and curbing waste, a testament to Mario's problem-solving skills.

The most substantial challenge encountered is the pursuit of geometric optimization. The response is a dynamic manual-computational workflow, constantly refined to meet the unique demands of climbing wall design, a challenge that Mario has brilliantly addressed.

Lessons from this endeavor underscore the need for designers to don the mantle of "computational crafters" and become intimately acquainted with materials, a philosophy championed by Mario.

The Climbing Walls project serves as a shining testament to the profound impact of computational design. It has redefined the parameters of climbing wall construction, forging structures that are not just efficient but also stand as aesthetically enchanting architectural marvels.

Precision during installation is a non-negotiable goal. Each panel is a piece of the climbing wall puzzle, meticulously labeled and strategically reordered based on geometry. A grid of holes and extrusions cements the pieces together with unwavering alignment, a testament to his meticulous attention to detail.



This computational approach to climbing wall design isn't hemmed in by the boundaries of wall size or shape. The toolkit includes Grasshopper and custom C# components, providing adaptability to diverse projects under Mario's expert guidance. The computational prowess allows for swift adjustments.

Ensuring the correct panel orientation during CNC milling and installation ranks among the top challenges. The solution is as ingenious as the design itself: etched labels on the panel backs, guaranteeing





What is a RhinoFabStudio®?

A RhinoFabStudio® (fabrication studio) is a McNeel-certified digital workshop, which includes a suite of Rhino and Rhino-compatible programs, computer-controlled tools, and training. The tools cover the various cutting-edge industrial methods and materials for designing, analyzing, and manufacturing just about anything.

Advantages

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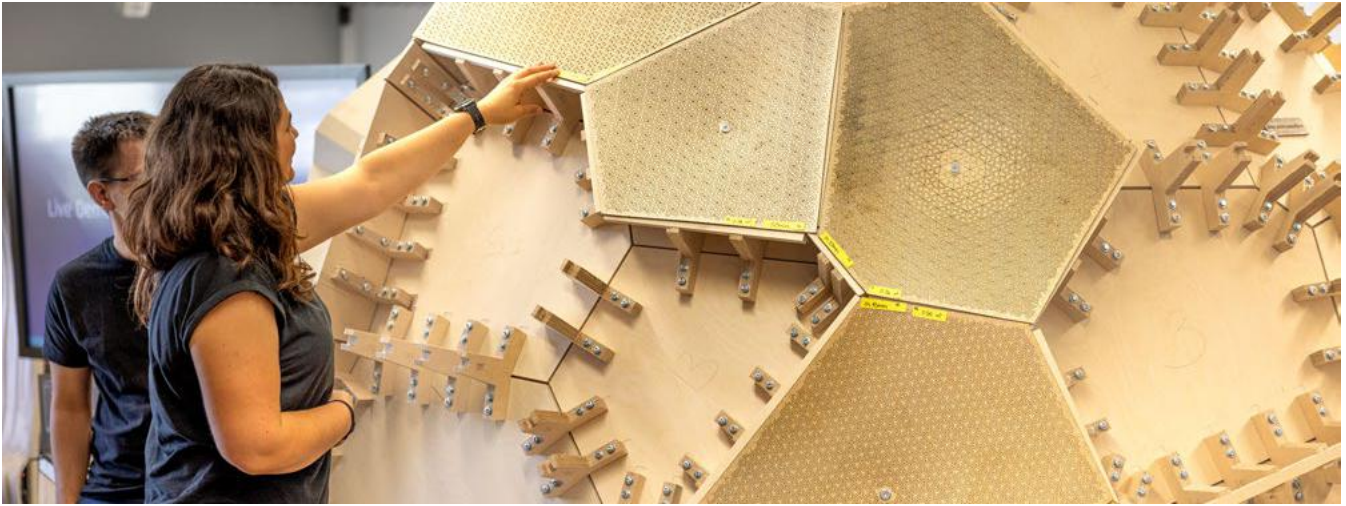
- You can log in and post your RhinoFabStudio events on the RhinoFabStudio event schedule.
- Your details and event schedule will be posted on the Rhino News Blog.
- Your event schedule will be announced in the RhinoFabStudio News e-mails monthly.

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Digital Fabricators Project: *Kerf Fabric*



This project emerged from the collaborative efforts of students enrolled in the Digital Construction Bachelor's program at Lucerne University of Applied Sciences and Arts (HSLU).

The meeting box, known as “Kerf Fabric,” was developed by Sheila Ebinger, Leon Bumüller, Timothy Nef, and Michael Mangold. They were inspired by wood, Voronoi partitioning, and the Kerf method. Using software tools such as Rhino, Grasshopper, and the OpneNest plugin, they created various surface prototypes, tested different sizes and numbers of Voronoi panels, and adjusted parameters. This approach allowed for uncomplicated optimizations in a short amount of time. The shape of the hemisphere and the connections adapted

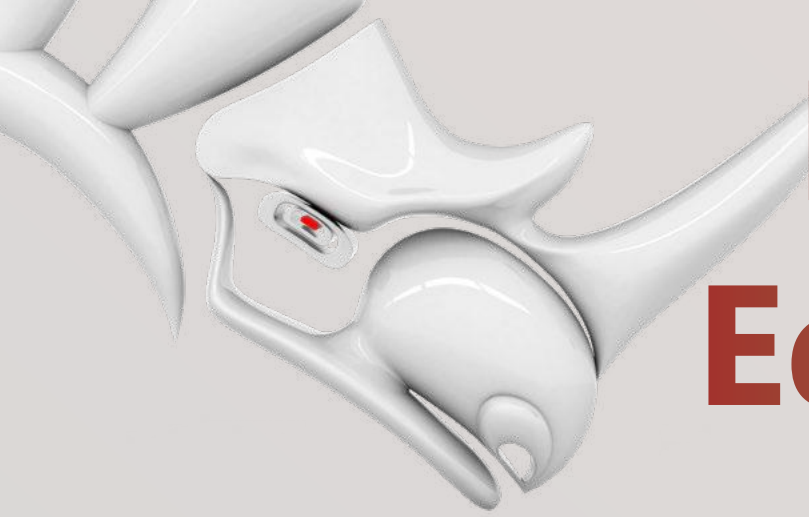


to the sphere influenced the production of Voronoi plates using a 3-axis CNC milling machine.

To ensure structural stability, the team incorporated mechanical screws with screw-in sleeves in addition to wood screws. One advantage of this process is that no screws are visible inside the Kerf Fabric. The entire fabrication and assembly of the meeting box took a total of four days, with each process spanning two days. The exterior part of the meeting box is scheduled for completion by the end of this year.



[see more](#)



Rhino3D Education

Select courses below, from beginners to specialized ones or **browse all our courses.**

New to Rhino?

Rendering & 3DM
Blocks

Rhino Introduction
and Intermediate

Jewelry

SubD in Rhino 7

Footwear

Rhino and Revit World

Digital Fabrication

Architecture and
2D Drafting

Marine Design

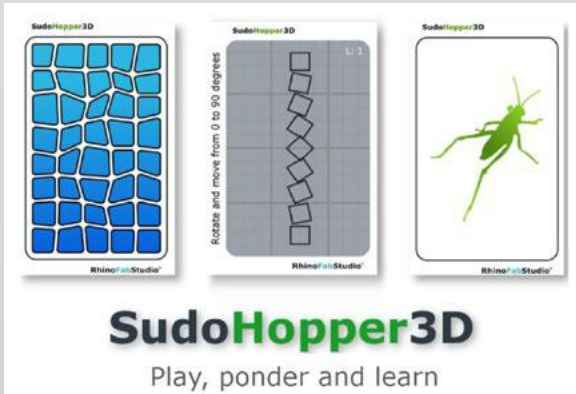
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Intro to Grasshopper



FREE COURSE

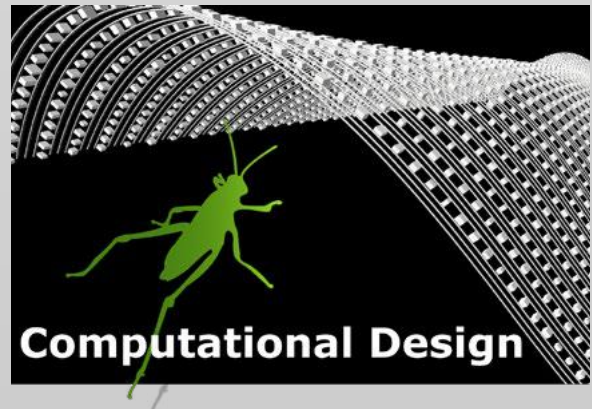
Grasshopper® is a graphical algorithm editor tightly integrated with Rhinoceros® (Rhino) 3D modeling software. Grasshopper offers new ways to develop and control computer-generated models. Users can preset repetitive processes and produce geometry through mathematical functions — via a series of mathematical operations instead of conventional commands.

To help in learning Grasshopper, we have created SudoHopper3D®, a card game to improve the overall understanding of parametric thinking. SudoHopper3D® takes you on a playful journey through mathematics, algorithms, and basic coding. Players can learn concepts such as vector geometry and trigonometry with surprising ease.

There's also more to SudoHopper3D® than simple math skills. Players also hone their problem-solving, logic, and sequential reasoning skills in a socially interrelated and entertaining environment.



Computational Design with Grasshopper for Rhino3D



Fee: \$59.95

Join this tailor-made course for design professionals and students seeking a comprehensive, self-paced learning experience. This program will allow you to delve into the world of Grasshopper with ease, exploring the many concepts and features.

Our class is designed to enhance your workflow, covering topics such as modeling geometry, data structures, general concepts, data types, data matching, lists, trees, and more. By the end of this course, you'll have a solid grasp of Grasshopper and parametric design thinking.

With 14 in-depth chapters and plenty of real-life examples, our "Computational Design with Grasshopper" course is your gateway to mastering this transformative tool. Join us and unlock your potential today!



After purchase, these courses will be available for two years!

Upcoming Events

Hone Your Skills With Rhino

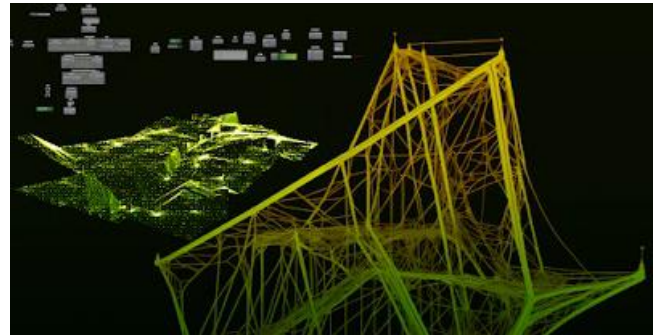


RHINO USER MEETING

HOSTED BY PIVOT INDUSTRIDESIGN - NOV 9, 2023

Get together with some of the brightest minds in the Rhino community and get an exclusive glimpse into the future of Rhino and CAD technology. McNeel will present an exclusive preview of what's coming next in Rhino 8, and there will be plenty of time to mingle with the broader design community.

WHERE: Oslo, Norway **TIME:** 5-10 PM CET
COST: Free! **LANGUAGE:** English



RHINO FOR STRUCTURAL ENGINEERING

HOSTED BY MCNEEL EUROPE - NOV 13-15, 2023

In this 3-day online workshop, you will get a basic understanding of how to use Rhino and Grasshopper in structural engineering. You will get to know useful Grasshopper plugins that aid the process during your daily practices. Taught by Junghow Park.

WHERE: Online **TIME:** 10 AM - 10 PM CEST
COST: EUR 395 **LANGUAGE:** English



GLOBAL 3D DESIGN FESTIVAL

HOSTED BY GRAVITY SKETCH - NOV 29-30, 2023

Join this 2-day online festival with industry-leading speakers, hands-on workshops and plenty more to leave you inspired. Hear some from of the best minds across various industries and expand your understanding of what the future may look like.

WHERE: Online **TIME:** Various Workshop Times **COST:** Free! **LANGUAGE:** English

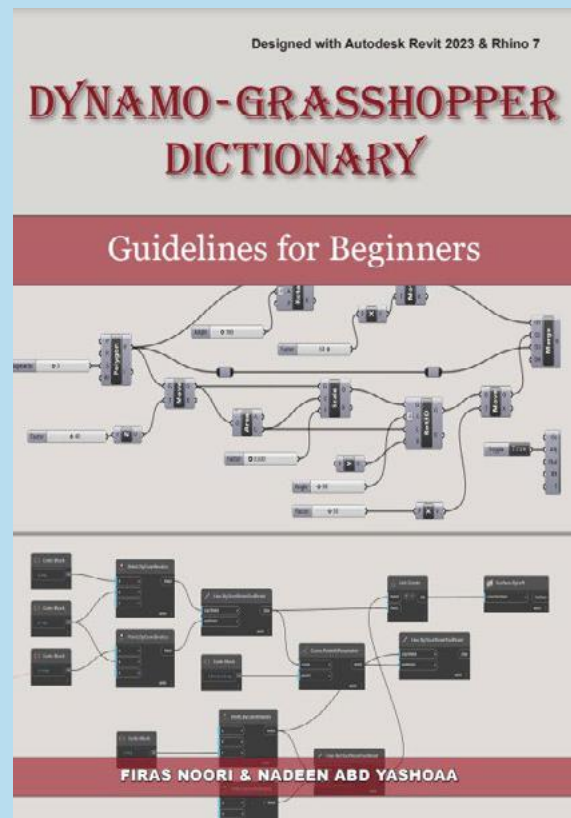
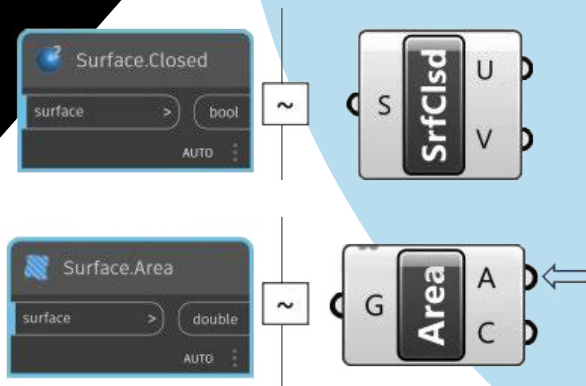


FOOTWEAR INNOVATION DAY

HOSTED BY DESIGN & DEVELOP - DEC 1, 2023

Join this forum dedicated to the latest advancements and trends in footwear design, processes and fabrication. Immerse yourself in the many talks and discussions and connect with like-minded professionals, entrepreneurs, and enthusiasts.

WHERE: Montebelluna, Italy **TIME:** 8:30 AM - 5:30 PM **COST:** Free! **LANGUAGE:** English



Dynamo - Grasshopper Dictionary: Guidelines for Beginners

This book serves as a valuable bridge between Dynamo and Grasshopper, making it an indispensable reference for both newcomers and experienced professionals seeking to navigate these platforms effectively.

Approaching the subject from a Dynamo-Revit perspective, the book comprises over 250 Dynamo nodes, each complete with official descriptions, specialized illustrations, and usage frequency. It offers direct translations of these nodes into Grasshopper components, highlighting critical similarities and differences while addressing their unique software requirements.

Beyond the dictionary aspect, the book provides an additional 44 handpicked scripts for both platforms, accompanied

by illustrative examples. These practical scripts clarify the functionality of nodes and components within real-life scenarios.

The authors, Firas Noori and Nadeen Abd Yashoaa, bring substantial experience in architectural and computational design to this comprehensive guide. Noori, an Autodesk Expert Elite and certified professional in Autodesk Revit Architecture, is renowned for his educational YouTube channel and workshops. Yashoaa contributes her knowledge of computational design and urban design to make this resource a must-have for anyone working in these domains.

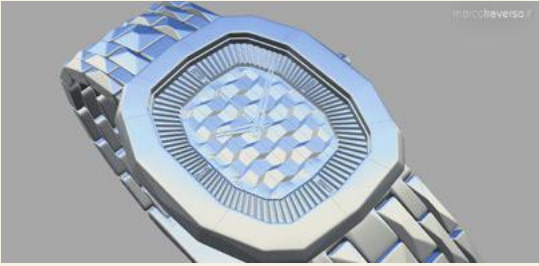


Designing Through Time Compilation



Industrial design (2)

Posted by Martin Šeřl



Art-Deco inspired Wrist Watch
Concept - Rhino+Grasshopper

Posted by Marco Traverso



Watch Design

Posted by A G R E

Rolex - Daytona

Posted by Fred

Gallery

Explore a showcase of inspiring projects from the Rhinoceros Forums Gallery as captivating images bring to life the creativity, innovation, and artistry behind each posted masterpiece.

Click, like, and support the creators behind these fantastic posts!



Career Corner:

Job Opportunities with Rhino or Grasshopper

COMPUTATIONAL DESIGNER

OXMAN

WHO: A Hybrid Design and R&D company that fuses design, technology, and biology to invent multi-scale products and environments.

WHAT: Seeking a Computational Designer to join an all-star team of deep thinkers and brilliant makers, leveraging computation as a language for mediation between human-made and nature-grown environments.



VISUAL ARTIST / 3D ARTIST

ROWLAND + BROUGHTON

WHO: A nationally recognized, award-winning architecture design firm specializing in residential architecture.

WHAT: Seeking an artist who can make creative decisions that bring the firm's architectural concepts to life through exceptional photorealistic renderings.



RHINO DESIGNER

FKB

WHO: A cutting-edge and innovative design and fabrication company specializing in creating immersive spaces.

WHAT: Looking to hire a full-time Designer to assist with the architectural, interior, industrial, and experiential design process per the client's wants and needs and at the direction of the Director of Design.



RHINO DESIGNER

SCENE EYEWEAR, LLC

WHO: Producer of American handmade luxury glasses manufactured by expert craftsmen.

WHAT: Looking for someone with experience in Rhino 3D CAD/CAM Design to be able to assist in the design of sunglasses and eyeglasses and also run and operate a milling CNC machine.



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