



**3D** • OCTOBER  
2023

# Rhinozine

**Celebrating 25 Years  
of Rhino with Rinus  
Roelofs:**

**A Pioneer's Journey  
at the Intersection of  
Art, Mathematics,  
and Technology**

**Looking  
Back at  
25 years of Rhino**

***The Story Behind HarmOH Pairing  
Bar's Unique Lighting Installation***

## **McNeel HQ**

Headquarters, North America  
& Pacific

146 N Canal St, Suite 320  
Seattle, WA 98103 USA

## **McNeel South East US & Latinoamérica**

Southeastern United States  
& Latin America

1538 NW 89th Court  
Miami, FL 33172 USA

## **McNeel Europe**

Europe, Middle East  
& Africa

Roger de Flor, 32-34, bajos  
Barcelona, 08018 España

## **McNeel Asia**

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# Get Rhino 7

**Rhino license keys work for both Mac and Windows!  
All licenses are permanent and do not expire.**

**Select your region**

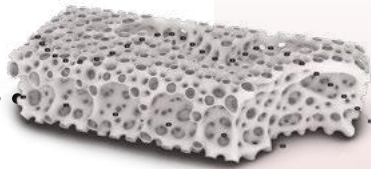


\*All products are shipped electronically. Prices include support and service releases for the current version. There are no maintenance fees.

Image by Kyle Houchens

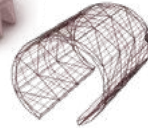
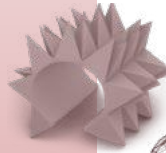
## 5. food4Rhino

Learn about Intact. Simulation for Rhino Grasshopper, and sphereneRHINO.



## 9. A Pioneer's Journey at the Intersection of Art, Mathematics, and Technology

As we celebrate Rhino's 25th anniversary, we recognize the contributions of Rinus Roelofs, a visionary artist who has played a significant role in this incredible journey.



## 15. HarmOH Pairing Bar's Unique Lighting Installation

In the heart of Brazil lies the HarmOH Pairing Bar, a stunning architectural marvel that showcases innovative lighting design.

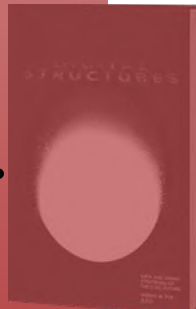


## 16. Rhino3D Education

Elevate your Rhino skills and enhance your rendering abilities with our online courses.

## 18. Book Discoveries

Discover 'digitalSTRUCTURES' by Wendy W. Fok, exploring technology, urban design, and data-driven architecture.



## 19. R Tips & Tricks

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## 20. Rhinoceros Forums

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## 8. Learning

Get to know 4 cutting-edge Master's Programs in Computational Design & Architecture

## 12. RhinoFabStudio

Explore the realm of avant-garde 3D-printed parametric jewelry with Nada Ashi's "Triangulation" project.

## 14. Looking Back at 25 Years of Rhino

Reflect on Rhino's 25-year journey.



### CONTRIBUTORS:

#### Editor:

Carola Trozzo

#### Review Team:

Andrés González, Jackie Nasser, Wendy Hemmelman, Jody Mills, and Sandy McNeel.

#### Designer:

Carola Trozzo

#### Other contributors:

Rinus Roelofs, Neel Goldy Kumar, Daniel Bachmann, Nada Ashi, Leonardo Gindri, Fenda Arqitetos, Wendy W Fok, Bob McNeel, Scott Davidson, Brian Gillespie, Dulce Chavez, Lucia Miguel, Julian Oquendo, and Niloofar Zaker.

#### Images:

Kyle Houchens (p. 2-3); [food4Rhino](#) (p. 5); Neel Goldy Kumar (p. 6); Daniel Bachmann (p. 7); <https://parametric-architecture.com/> (p. 8); Rinus Roelofs (p. 9-11); Scott Davidson (p.10); Nada Ashi (p. 13); Jackie Nasser, Carlos Pérez (p. 14); Leonardo Gindri (p. 15); [rhino3d.education](#) (p. 16); Julian Oquendo (p. 17); Wendy W Fok (p. 18); Brian Gillespie (p. 20); ThomasAn, Robert Butera, Michele Monterisi, Thomas\_Helzle (p. 21); NASA (p. 22-23).

#### In the Cover:

AI generated image using Adobe Firefly

#### Contact Us:

carola@mcneel.com

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

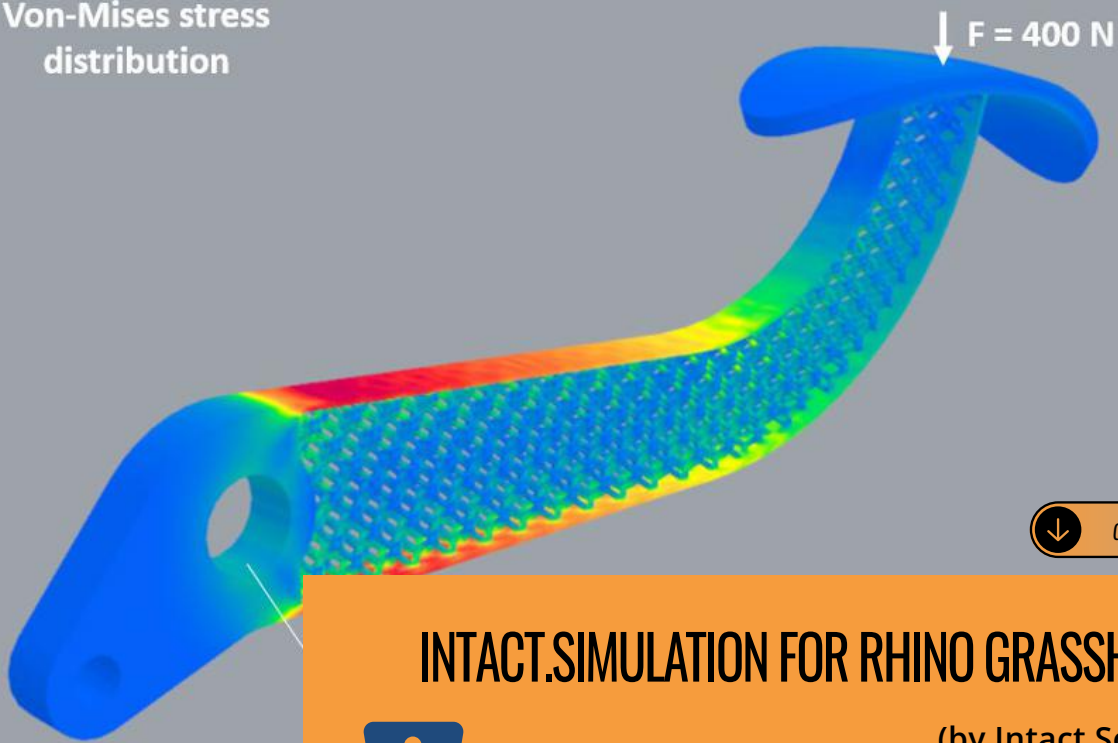


GhPython

***Check it out!***

[www.food4rhino.com](http://www.food4rhino.com)

Von-Mises stress distribution



download

## INTACT.SIMULATION FOR RHINO GRASSHOPPER



(by Intact Solutions)

Category: Analysis and simulation, Manufacturing, Mechanical design, Physics, Structural engineering

This is a game-changing solution for your Grasshopper mechanical simulation needs.

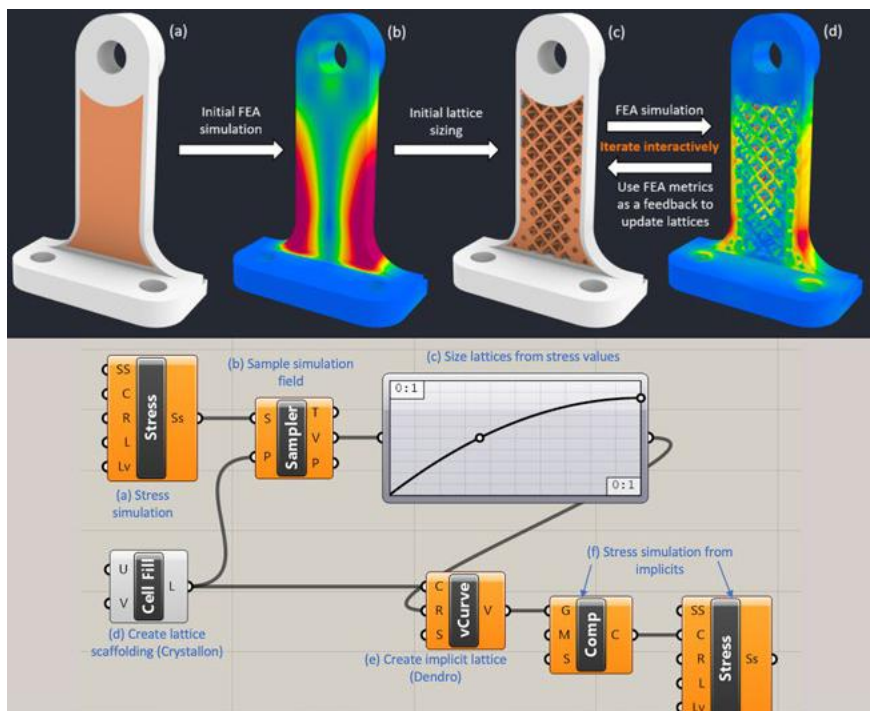
Say farewell to intricate FEA geometry preprocessing and meshing woes. This state-of-the-art physics engine seamlessly solves challenges on mesh, Brep, and voxel geometry while maintaining your workflow's automation and interactivity.

### Experience Unmatched Physics:

Intact.Simulation boasts robust structural, vibration, and thermal physics, making it ideal for lattice structures and extensive assemblies. Achieve both speed and precision – rapid concept design solving and meticulous validation capabilities.

### Cross-Industry Integration:

Tailored for industrial design, footwear, medical devices,

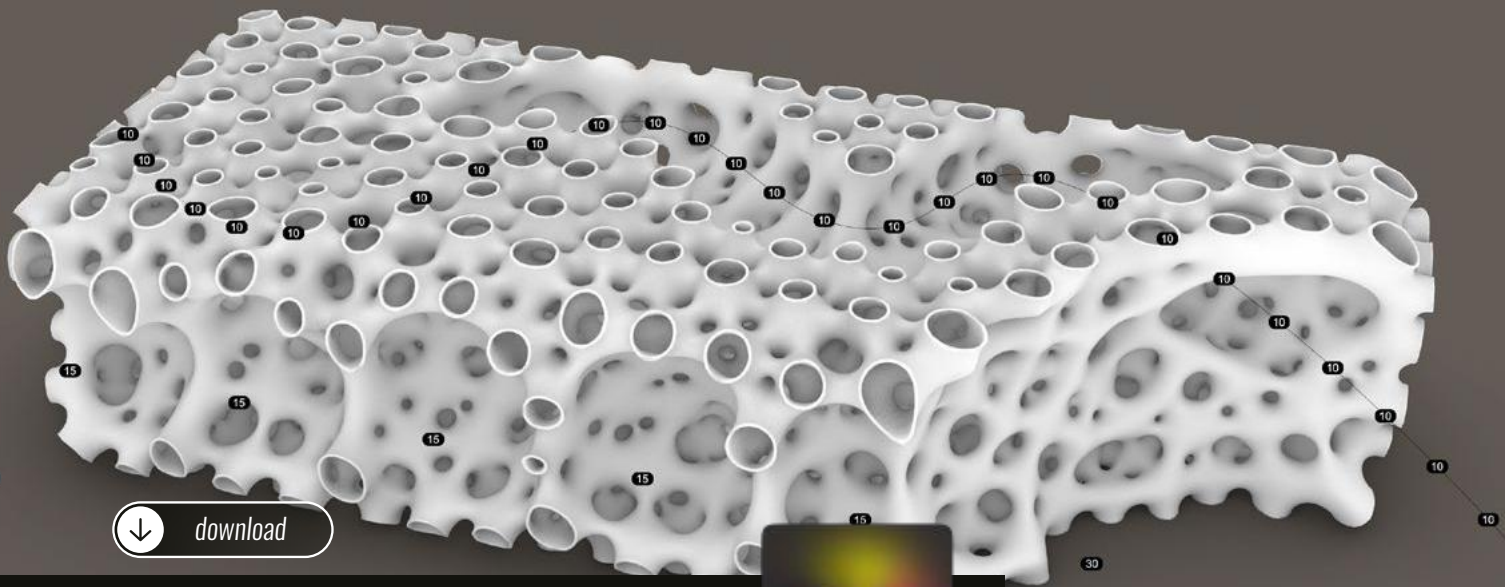


shipbuilding, architecture, and civil engineering, Intact.Simulation seamlessly fits into various workflows.

### Legacy of Innovation:

As industry leaders since

2011 in meshless simulation with Scan&Solve, Intact Solutions now brings you the Immersed Method of Moments for enhanced performance and scalability.



download

# SPHERENERHINO

(by spherene)

Category: Aerospace, Footwear, Manufacturing, Mathematics, Mechanical Design



## Introducing sphereneRHINO Public Beta: A groundbreaking Rhino3D plugin that seamlessly incorporates an entirely novel class of minimal surfaces.

The Public Beta version, available from within Rhino's package manager, empowers unique shapes, efficient material use, and reduced reliance on support structures for manufacturing.

Generating structures with solid-like properties, exceptional stiffness, and a remarkable ability to adapt to any surface while efficiently distributing stresses, sphereneRHINO is

powered by the innovative Adaptive Density Minimal Surface (ADMS) technology.

Experience unmatched design flexibility with precise control over parameters such as density, wall thickness, coverage, and a spectrum of other customizable options for your parts.

Transform your design and manufacturing workflows



with sphereneRHINO, and witness the evolution of design possibilities. Stay tuned for the imminent launch.

sphereneRHINO will attend Rhino World, Rhino's global ecosystem event taking place in Barcelona this month, as a gold sponsor, and next month will attend Formnext in Frankfurt, Booth 12.0 A52. The plugin can be tried out at both events, and people can have discussions with the sphereneRHINO team.



# Learning

## Masters in Computational Design & Architecture

We are excited to present these advanced Masters Programs that are leading the way in architectural innovation. In today's world, where technology is rapidly advancing and there is a pressing need for sustainable design solutions, these programs focus on integrating advanced architecture and computational design.

### Emergent Technologies and Design at Architectural Association School of Architecture



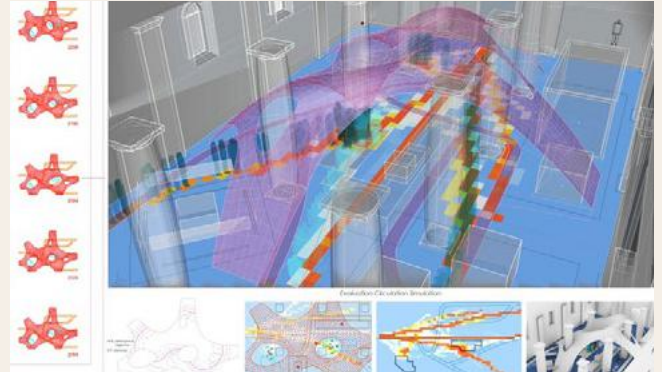
This is a postgraduate degree for architecture and engineering graduates. It blends computational design, robotic fabrication, and ecological exploration. Students experiment, reflect, and document their findings, pushing the boundaries of sustainable architecture.

### Integrative Technologies and Architectural Design Research at University of Stuttgart



Join the M.Sc. in Integrative Technologies and Architectural Design Research for a two-year interdisciplinary exploration of cutting-edge approaches to the built environment, merging design, engineering, and natural sciences.

### Computational Design Practices at Columbia GSAPP



Designed for recent graduates and practitioners, this program integrates architecture, data visualization, and urban planning. Push the boundaries of computational design at multiple scales with critical and creative engagement.

### Advanced Architecture at IAAC (Institute for Advanced Architecture of Catalonia)



Join this program to revolutionize architectural practice. Embrace 'Learning by Doing' and 'Design by Research' methodologies, nurturing critical thinking and innovation. Customize your agenda and gain multidisciplinary skills to create a positive impact on architecture and the environment.

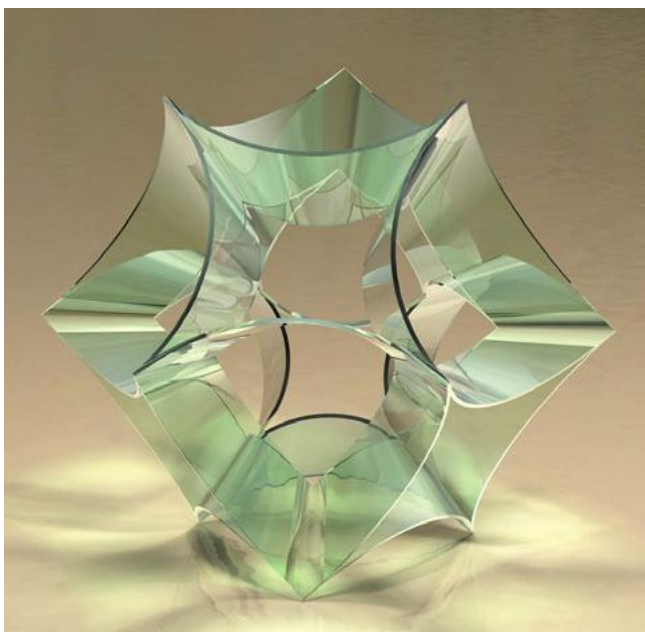


# Celebrating 25 Years of Rhino with Rinus Roelofs: A Pioneer's Journey at the Intersection of Art, Mathematics, and Technology

*As we celebrate Rhino's 25th anniversary, we recognize the contributions of **Rinus Roelofs**, a visionary artist who has played a significant role in this incredible journey. Roelofs' unique creations combine art, mathematics, and technology to produce a stunning and captivating display of creativity.*

## Background and Early Influences

In 1971, after high school, Roelofs had to choose between attending an art academy or pursuing a mathematics degree at the Technical University in Enschede. He chose the latter and enrolled in applied mathematics. During this period, he honed his math skills



and delved into programming, when computers were still as big as houses and punch cards were used to access data and programs.

Although Roelofs eventually transitioned to the art academy, his passion for mathematics remained.

**Escher's** work profoundly influenced him, inspiring his quest to blend mathematics and art.

## Artistic Style and the Beauty of Mathematics

Roelofs' artistic style reflects his deep fascination with the beauty of mathematical structures. His art celebrates the essence of mathematics itself. He has evolved his passion for visualizing mathematical concepts, which he crystallized during his Ph.D. pursuits in 2018. His research led him to discover new uniform polyhedra and explore the art of visualizing mathematical concepts. This culmination was marked by the completion of his Ph.D. in 2020.



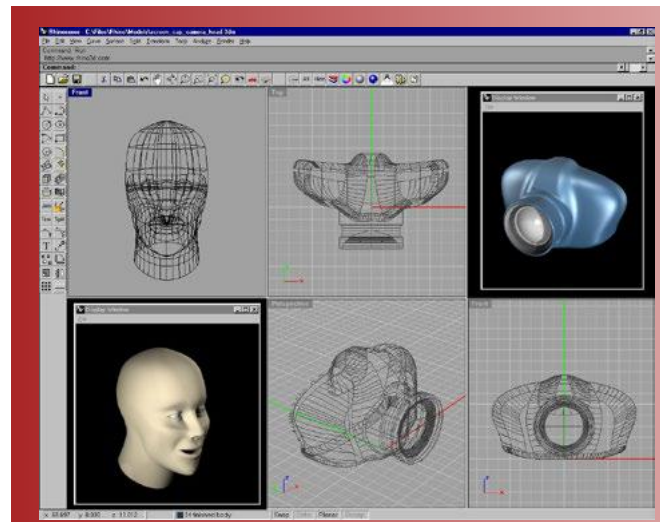
## Pioneering the Use of Digital Tools

Roelofs was a pioneer in using digital tools for artistic expression. Rhino's ability to create almost any 3D shape perfectly aligns with his creative vision. It allows him to bring his sketches to life and integrate programming while utilizing his mathematical expertise. His toolkit is further enhanced with the addition of Grasshopper.

## 3D Printing: A Technological Artistic Revolution

The introduction of 3D printing was a turning point in Rinus' artistry. It empowered him to transcend traditional limits while maintaining a personal touch. Notably, his design for the Philips Award (image below)

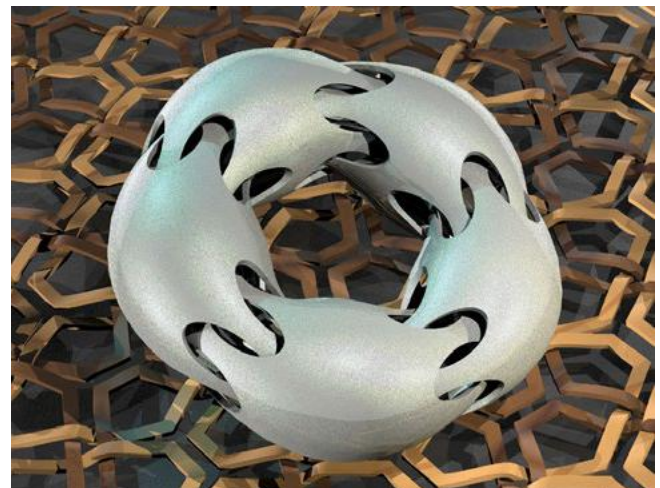
transitioned from an SLS-printed model to a bronze masterpiece. The entire design process of this project, along with Rinus' captivating presentation to Philips, unfolded within the innovative realm of **Rhino 1**. Philips was notably impressed and appreciated the fact that it was conceived and crafted in the sophisticated landscape of a 3D design software. This facilitated the 3D printing process to bring this visionary concept to



Rhino 1's interface, a glimpse into the past.

life, all of this being remarkably modern in the year 2000.

The following year, Rinus won a digital sculpture competition (image below) hosted by **Ars Mathematica** as a recognition of his exceptional skills.

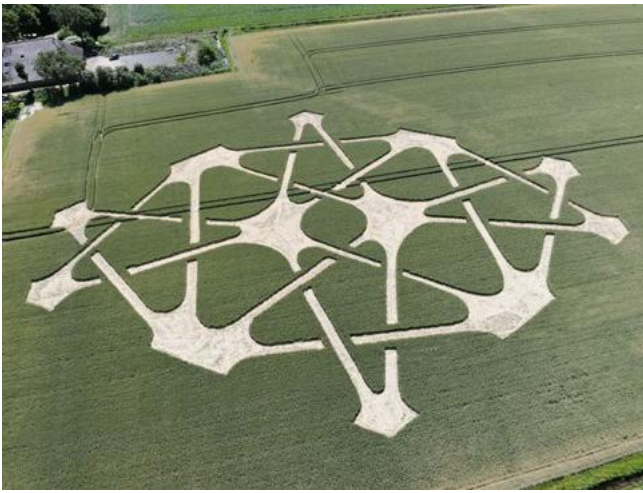


Rinus continued to innovate with six 3D-printed concrete sculptures and a cast iron statue, leading to collaborations.

## Materialization and Adaptability

Roelofs designs sculptures using Rhino without preconceived notions of scale, material, or color. This flexible approach allows him to explore spatial dynamics freely, making informed decisions on his creative journey.

Roelofs takes a practical approach to big projects. He starts with smaller models using different materials to experiment.

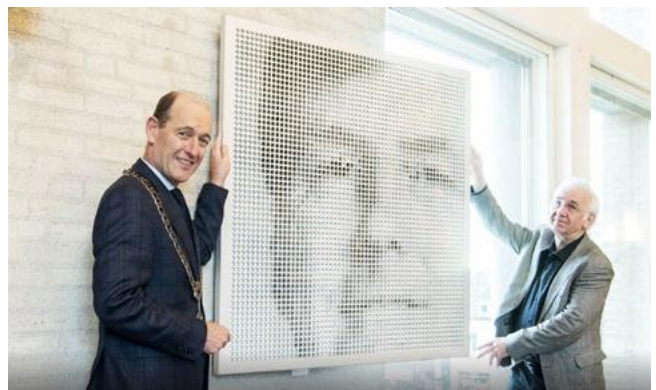


He can anticipate and resolve production issues with a CNC milling machine and laser cutter. This technique helps him reduce obstacles.

Roelofs uses various techniques and collaborates with specialists to turn his digital ideas into tangible objects. His proficiency in Rhino allows him to work with other professionals to achieve his artistic vision seamlessly. Communication and teamwork are crucial to his success. With the help of Rhino and GPS technology, Roelofs created his most extensive drawing, a vast grain drawing spanning over 100 meters (image above).

### Future Directions and Innovation

As we come to the end of our exploration into the world of Rinus Roelofs, it's fascinating to catch a glimpse of his recent projects and future aspirations. His innovative approach to art is evident in his creation of a unique portrait (image below) for the town hall in his hometown of Hengelo, where he used shadow as a powerful artistic element. Rinus' adeptness with cutting-edge technology is also clear in his incorporation of **Grasshopper** in this endeavor. Moreover, in the autumn of this year, nine impressive sculptures of his will find a permanent home in the square in front of the railway station in Hengelo.



As we celebrate Rhino's 25th anniversary, Rinus Roelofs is a shining example of the innovative and creative spirit that has propelled this software to greatness. His journey is a testament to the endless possibilities when mathematics, art, and technology create something extraordinary.



# 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

As an Authorized RhinoFabStudio® you will:

- Be recognized as a leading-edge industrial-grade digital design, analysis, and fabrication expertise provider.
- Have all of your events and activities published to a worldwide audience.
- Have access to specialty digital design, analysis, and fabrication experts.
- Have direct access to many digital design, analysis, and fabrication product development teams.

Once approved:

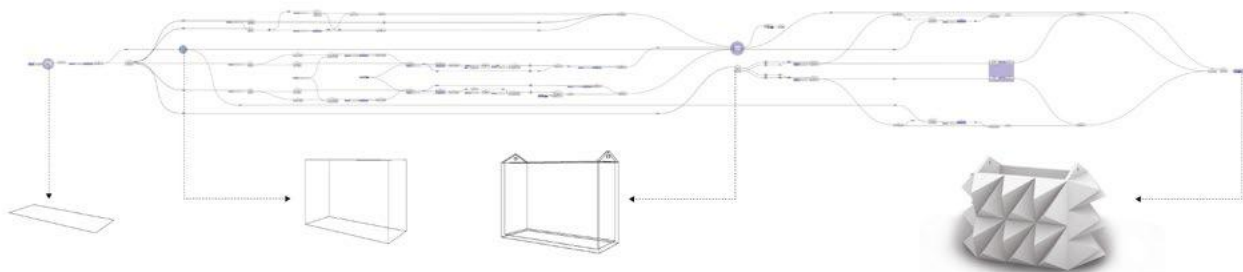
- You can log in and post your RhinoFabStudio events on the RhinoFabStudio event schedule.
- Your details and event schedule will be posted on the Rhino News Blog.
- Your event schedule will be announced in the RhinoFabStudio News e-mails monthly.

**Want to become an authorized  
RhinoFabStudio®?**



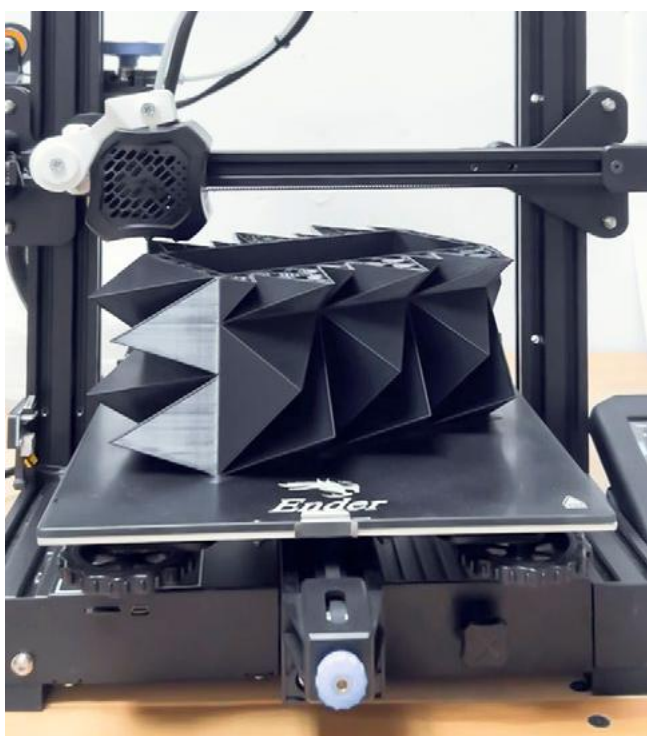
[more info](#)

# Digital Fabricators Project: *Triangulation*, 3D printed parametric jewelry & accessories



Enter the realm of avant-garde jewelry and accessories, where **Nada Ashi**, a visionary designer based in Dubai, redefines conventional forms and textures with her 3D-printed parametric creations. Inspired by the allure of futuristic architecture and the intricacies of origami, Nada utilizes cutting-edge AI tools to breathe life into jewelry that exudes dynamism and modernity.

“Triangulation,” Nada’s brainchild, explores uncharted territory in fashion by seamlessly blending architectural aesthetics with advanced design technology. AI-generated designs, meticulously crafted through **Rhino**



and **Grasshopper**, take on tangible form through the marvel of 3D printing.

This project is not just about jewelry; it’s a voyage into a new fashion dimension where innovation and technology converge. Nada’s 3D-printed parametric jewelry and accessories, crafted at **Controlmad**, herald a future where fashion knows no boundaries, and innovation reigns supreme. This is wearable art, redefined.

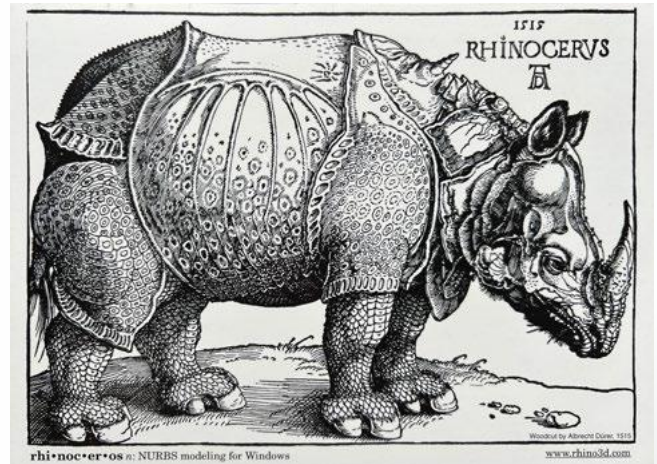
# Looking Back at **25** Years of Rhino

*As we celebrate Rhino's 25th anniversary, we are grateful for the incredible journey.*

Robert McNeel & Associates started in 1978 in a basement as an accounting software developer. In 1985, our three-person company became an AutoCAD dealer. We focused on replacing drafting tables with productive AutoCAD systems for our first fifteen years.

Located in Seattle, surrounded by water and boating industries, our AutoCAD clients needed software accommodating curved surfaces. (Think boat hulls.) We started work on prototypes and, in April 1994, released our first public beta version. Rhino's popularity grew exponentially, with over 110,000 beta testers by its commercial release of Rhino Version 1.0 in October 1998.

Rhino continues to innovate today, providing designers and engineers worldwide with advanced capabilities. We now have development, sales, support, training offices, and affiliates in Seattle, Boston, Miami, Medellin,



Barcelona, Rome, Tokyo, Taipei, Seoul, Kuala Lumpur, Beijing, Shenzhen, and Shanghai. We also have over 700 dealers, distributors, OEMs, and training centers around the world.

For these 25 years, we have focused on developing, publishing, and supporting **Rhino** and related products for designers, engineers, fabricators, and their support staff. We are most successful when we partner with clients to shape emerging technologies into productive and profitable tools.

**We sincerely thank you for being part of this incredible journey.**  
**Here's to many more years of innovation with Rhino!**



# The Story Behind HarmOH Pairing Bar's Unique Lighting Installation

*In the heart of Brazil lies the HarmOH Pairing Bar, a stunning architectural marvel that showcases innovative lighting design. It was created in collaboration with **Fenda Arquitetos** and Computational Designer **Leonardo Gindri**.*



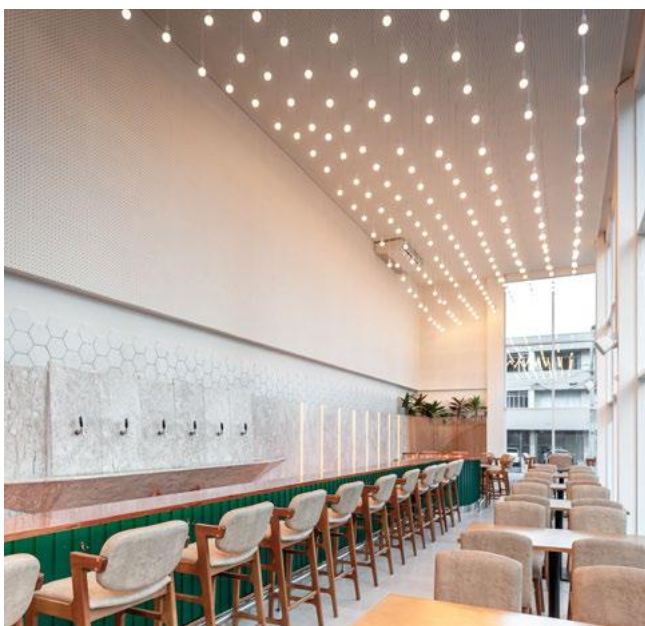
Creating the landmark involved carefully balancing creativity, budget limitations, and time constraints. The goal was to make an inviting structure that would catch the attention of people passing by. The idea of “fluidity” emerged, replicating the flow of the adjacent street within the building. Computational design, powered by Grasshopper,

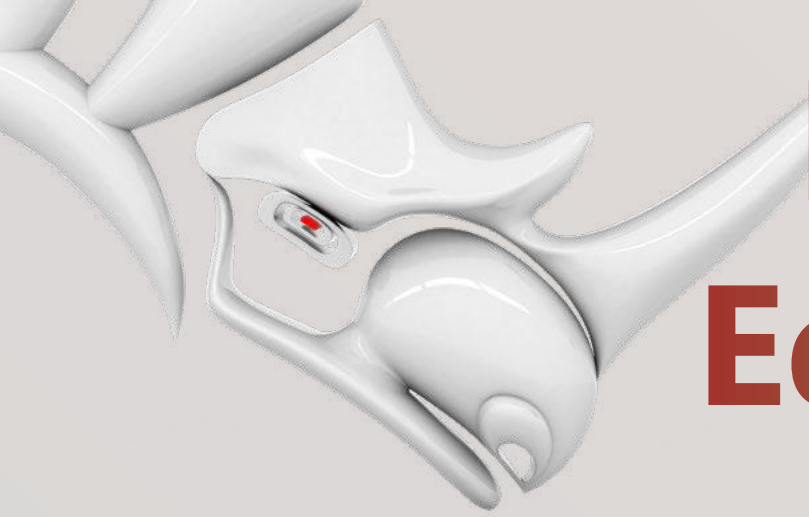
played a significant role in making intricate yet practical designs. Archicad Live Connection made it easy to transfer data for integrated documentation.

The lighting fixtures were chosen based on their aesthetic appeal, lighting color, and cost, with simulations used to create an appealing yet cost-effective ambiance.

The assembly revealed the true grandeur of the HarmOH Pairing Bar, surpassing expectations.

The bar’s dynamic lighting design serves as a magnetic force, attracting people to explore and experience its unique identity, setting it apart from other establishments in the city. Its transformative effect creates an unforgettable atmosphere, making every visit to HarmOH Pairing Bar an enchanting and memorable experience.





# 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

Grasshopper &  
GH-Python

Podcasts, Webinars,  
and Short Tutorials

Enjoy **20% OFF** with coupon code:  
**RHINO3DEDUCATION20** at checkout!

[www.Rhino3D.Education](http://www.Rhino3D.Education)



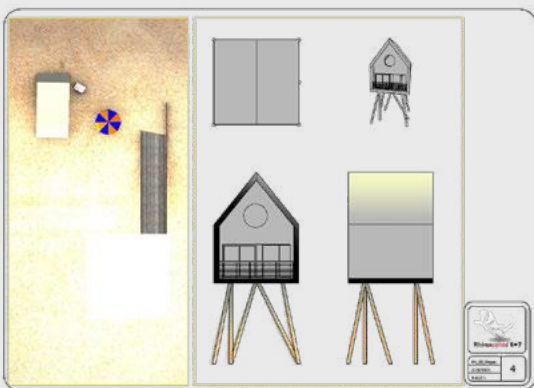
# Rhino 6 and 7 Intermediate



**Fee: \$49.95**

This online course will take your Rhino 6 and 7 skills to the next level. This intermediate-level program is perfect for those who want to advance their knowledge and unlock the full potential of Rhino. You'll learn about 2D representation, complex shape handling, intelligent objects, surfaces, text, animation, advanced rendering, and SubD modeling. With isocurves, you can create modern chair designs and master camera angles with different lenses. For the final project, you'll be challenged to create a complex 3D masterpiece that showcases your newfound expertise. Whether you are a beginner or an experienced designer, our comprehensive curriculum will help you supercharge your 3D modeling skills. Don't miss this chance to become a Rhino expert and grow your skills and creativity.

[!\[\]\(c3d993ca47bfe2a953c700506ce31fa0\_img.jpg\) take this class now](#)



# Rendering with Rhino 7

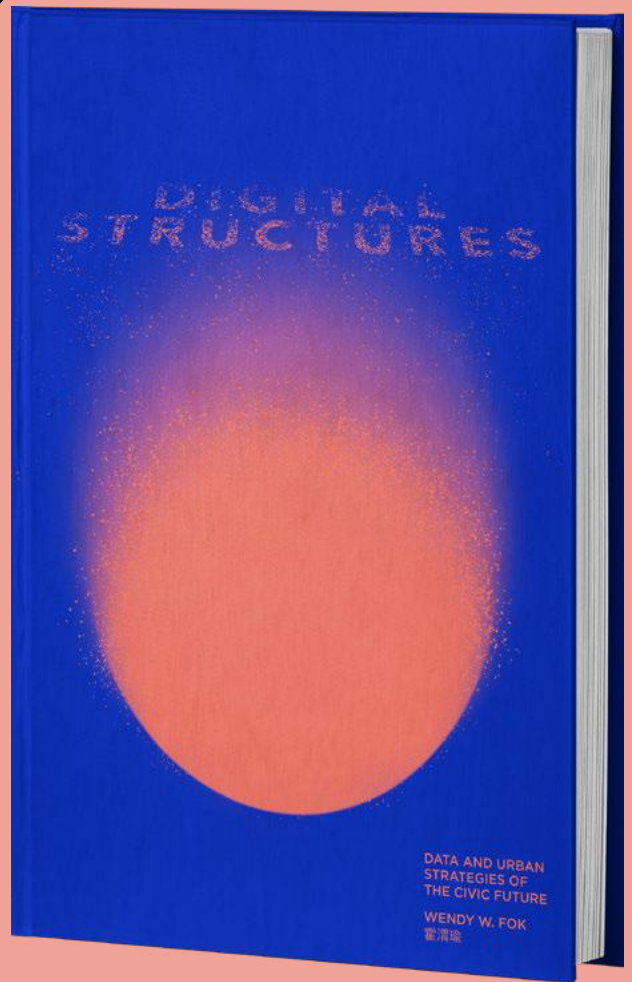
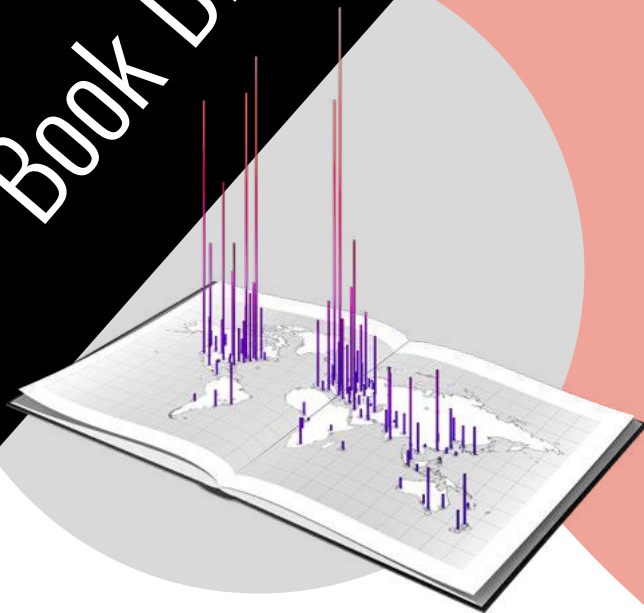
**Fee: \$59.95**

Enhance your presentation abilities and create memorable visuals with our online course. Whether you're an architect, engineer, designer, or someone passionate about Rhino 7, we have the tools and techniques to help you excel. Our course offers step-by-step guidance on rendering a rural housing project, covering crucial topics such as camera setup, materials, animations, and more. These skills are incredibly versatile and can be applied to various projects. Even if you lack prior rendering experience, you can still participate with a positive attitude and basic Rhino modeling knowledge. Make sure to have Rhino 7 installed on your computer. By the end of the course, you'll be able to craft compelling visuals that will set you apart in your field.

[!\[\]\(cf531ed27e91483460120fcc057b3901\_img.jpg\) take this class now](#)

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

# Book Discoveries



## digitalSTRUCTURES: Data and Urban Strategies of the Civic Future

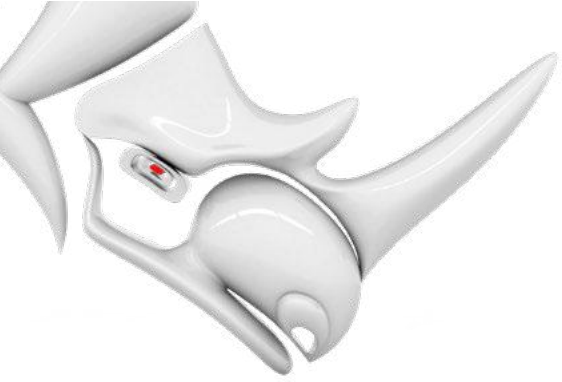
Wendy W. Fok's "digitalSTRUCTURES" is an innovative study that examines how technology, urban design, and data-driven architecture intersect. As an imaginative architect and innovator, Fok investigates the significant influence of digital property and data infrastructures on our physical surroundings. The book addresses the pressing issues associated with resource-intensive digital transactions and augmented reality while suggesting solutions to minimize their negative consequences.

Fok's approach integrates XR and AR to provide readers with a comprehensive understanding of the topic. The book also includes a digital platform that can

be accessed freely, which features video interviews with industry experts and interactive 3D artifacts that help visualize the interaction between data and physical and digital spaces.

The "digitalSTRUCTURES" research project is crucial in understanding the role of the internet in Web 3.0 and its connection to urban construction and digital ownership. It is a living online document showcasing experimental formats that have gained global recognition, highlighting its relevance in contemporary discourse.

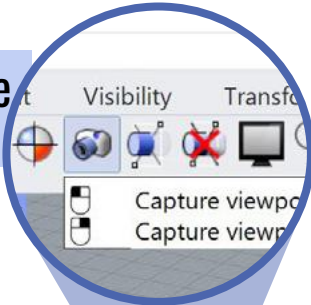




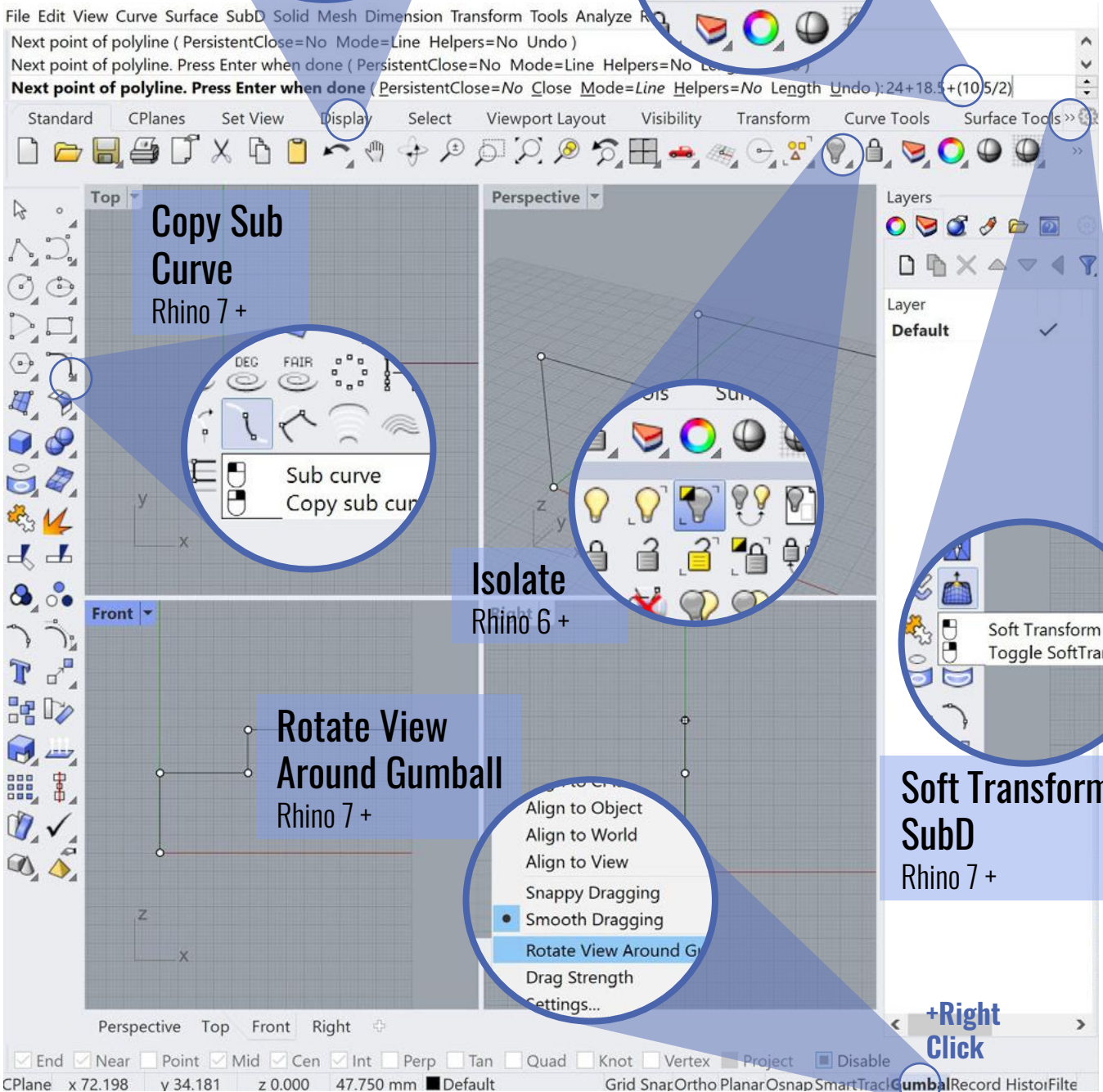
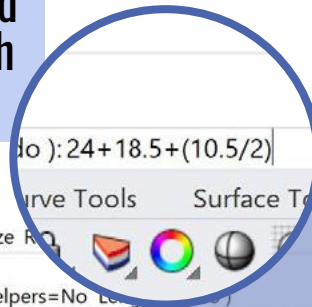
# Tips & Tricks

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

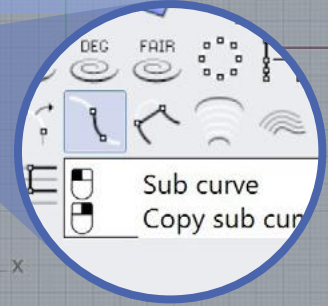
**View Capture**  
Rhino 6 +



**Command Line Math**  
Rhino 6 +



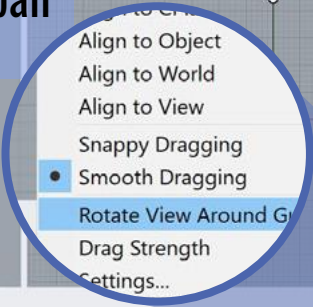
**Copy Sub Curve**  
Rhino 7 +



**Isolate**  
Rhino 6 +

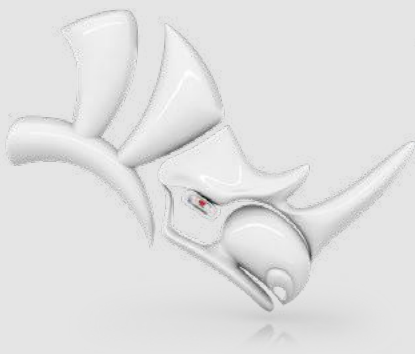


**Rotate View Around Gumball**  
Rhino 7 +



**Soft Transform SubD**  
Rhino 7 +

**+Right Click**



# Rhinoceros<sup>®</sup> Forums

## Welcome to the McNeel Forums!

We (the McNeel developers and support team) are glad you're here. We welcome simple or complex questions, from new or veteran users, about all our products.

Translated discussion forums are available in Italian and Chinese.



**Brian Gillespie**

Rhino Product Manager,  
Systems Designer, Python  
fan, and banjo geek.

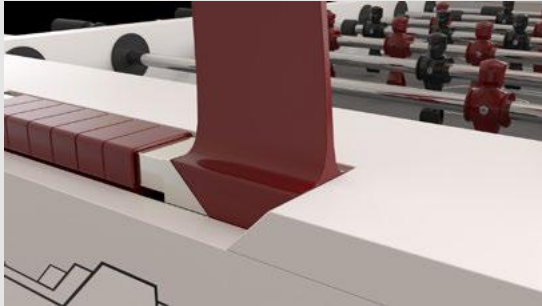
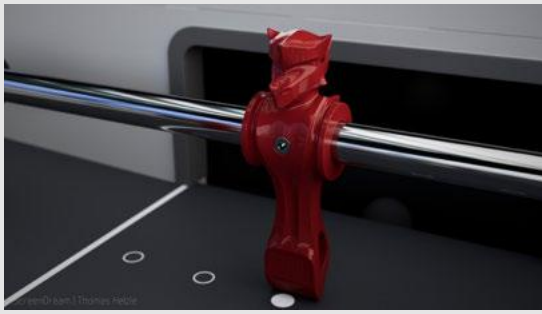
Getting  
started



**Ask a question.  
Rant a little. Rave a little.**

**[discourse.mcneel.com](https://discourse.mcneel.com)**

# 25 Years of Rhino Red Compilation



The Guardian and the Dragon, a journey...

Posted by Thomas\_Helzle



Jewelry rhino7\_my last exercise of the year 2021

Posted by Michele Monterisi

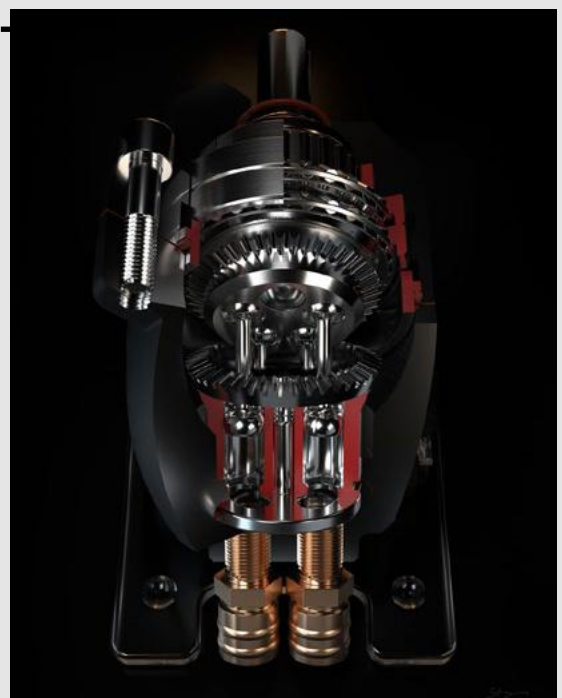
1932 Ford "high Boy" roadster

Posted by Robert Butera



Top View (Piston pump) - Render

Posted by ThomasAn



## 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!**

## New plugin to share?

Have a plugin for Rhino or Grasshopper?  
**Email us** to add it to the food4Rhino web site.

## Get your project published!

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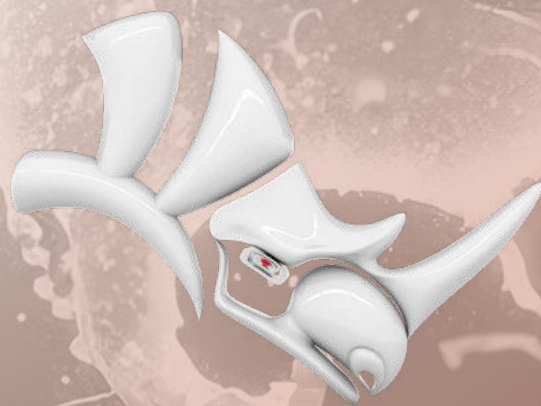
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