

3D • AUGUST  
2023

# Rhinozine

## Re-Emerge Pavilion

A Marvel of Sustainability and Collaboration by AA EmTech and Hassell Studio.

**Book Discoveries:**  
The Essential Guide to Digital Jewelry Design

Learn about **LANDS DESIGN**, **PUFFERFISH**, **AIR FOR RHINOCEROS** and **RHINONC**.

## Electrifying the Road

A group of students takes on the challenge of designing an electric go-kart.

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**Rhino license keys work for both Mac and Windows!  
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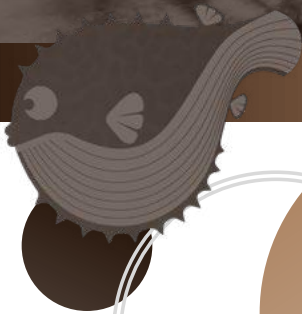


\*All products are shipped electronically. Prices include support and service releases for the current version. There are no maintenance fees.

Image by Kyle Houchens

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A Marvel of Sustainability and Collaboration by AA EmTech and Hassell Studio.

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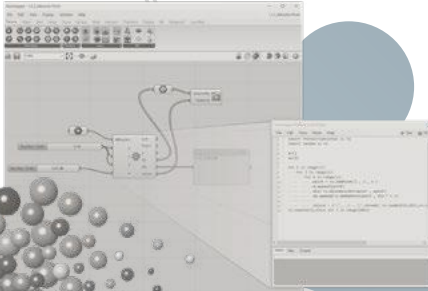
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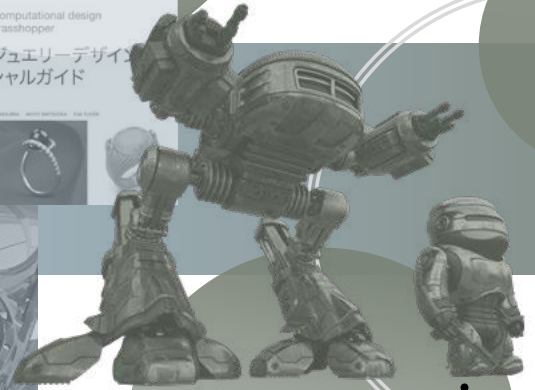
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Rave a little.

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Re-Emerge Pavilion by Studio NAARO©

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**Corrections:** -





# food4Rhino

Apps for Rhino and Grasshopper

The food4Rhino website 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



Paneling Tools



GhPython

***Check it out!***

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





download

# LANDS DESIGN

(by Albert Rodríguez)



Category: Architecture, Illustration, Civil engineering, Landscaping

## The professional Landscape design software!

Lands Design is a technical software for Landscape design with BIM technology. It works as a powerful tool for 2D technical drawings, 3D modeling, and photorealistic images of landscape projects.

### Some of the Lands Design Features are:

-The possibility of importing terrains.

-A plant database with more than 8000 species.

-Instruments to design your irrigation system.

-Setting out 2D plans from the 3D model.

-Real images, virtual tours, and walk mode to show your clients.

-Lands Design works with the Grasshopper visual programming language.

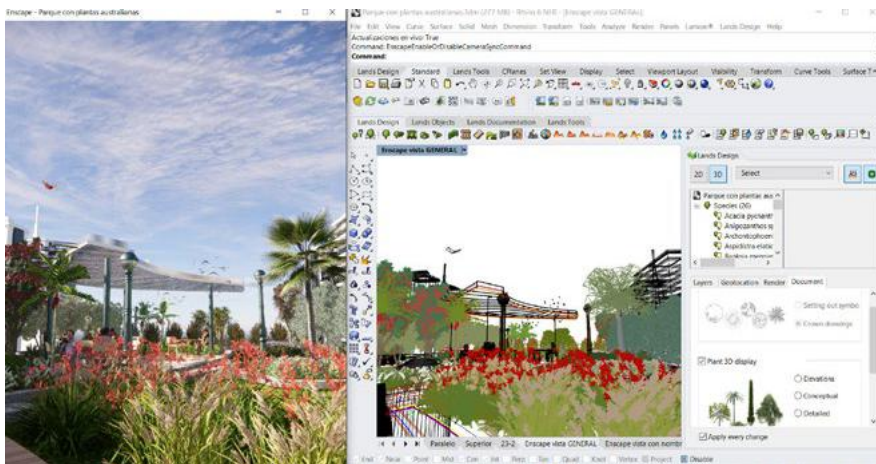


## Landscape Design with Lands Design in Rhino

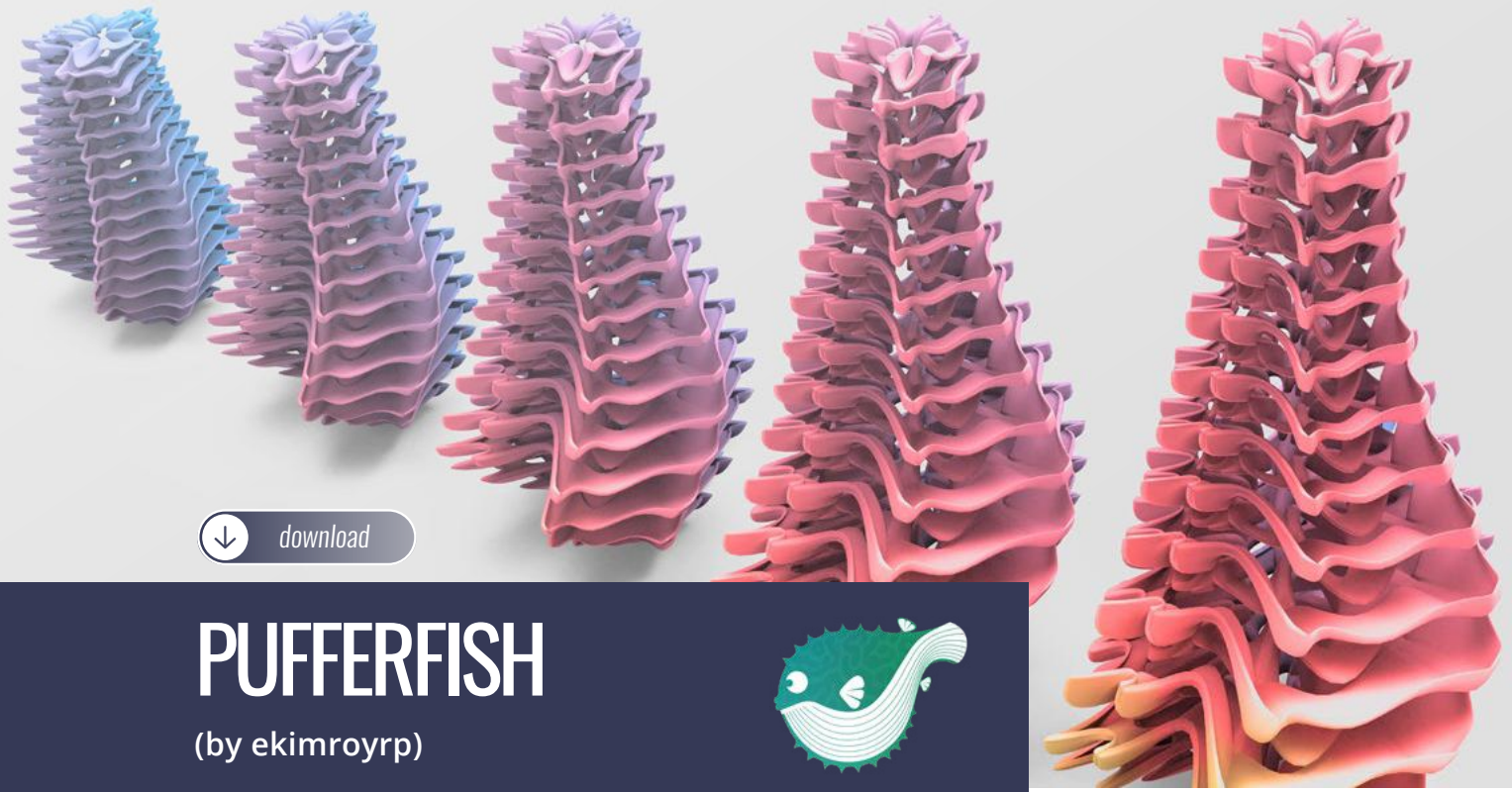
This course teaches you how to apply the program to get the best results in your landscape design projects' design, modeling, visualization, and documentation.

This course is available for free!

take this class now







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# PUFFERFISH

(by ekimroyrp)

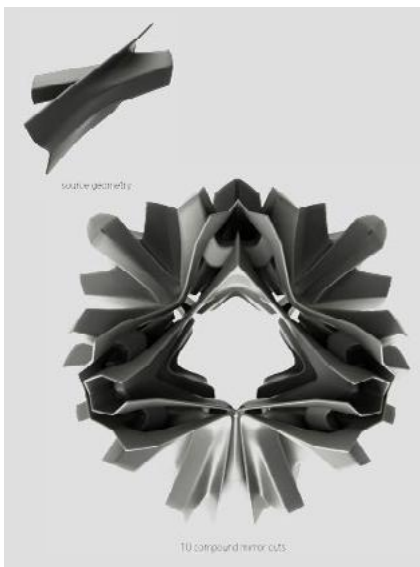
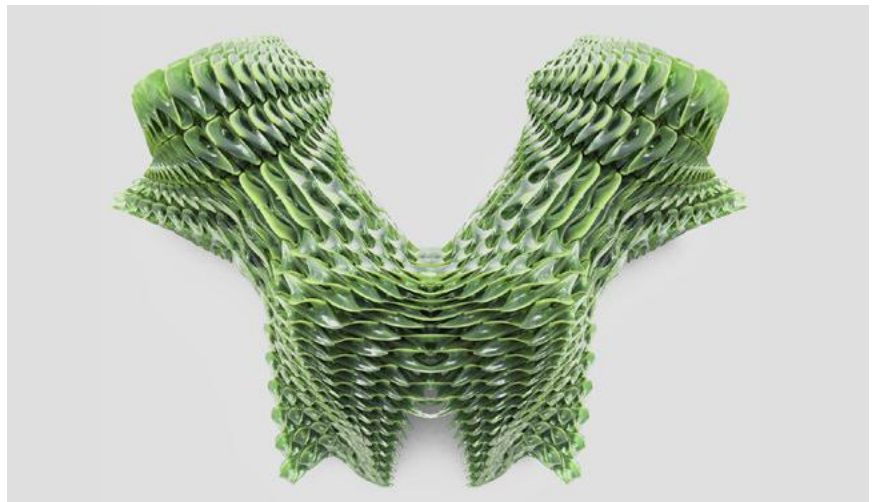
Category: Animation, Meshes and SubD, Modeling, Prototyping



## The Pufferfish is one of the few animals capable of changing its shape.

This plugin is a set of 330 components that focuses on Tweens, Blends, Morphs, Averages, Transformations, & Interpolations - essentially Shape Changing.

Pufferfish mainly uses parameters and factors for inputs for more



custom control over operations like tweens and grids instead of grasshopper's usual division count inputs. These components are accompanied by support components which are helpful methods for tween/blend/morph/lattice operations such as making curves compatible, a

custom curve graph mapper, and a multi-threaded morph to the twisted box.

In addition, extra components simplify some common grasshopper operations, such as testing for equality within tolerance and rounding to the nearest numbers.





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# AIR FOR RHINOCEROS

(by SketchUpBar)

Category: Architecture, Landscaping, Rendering & Urban Planning

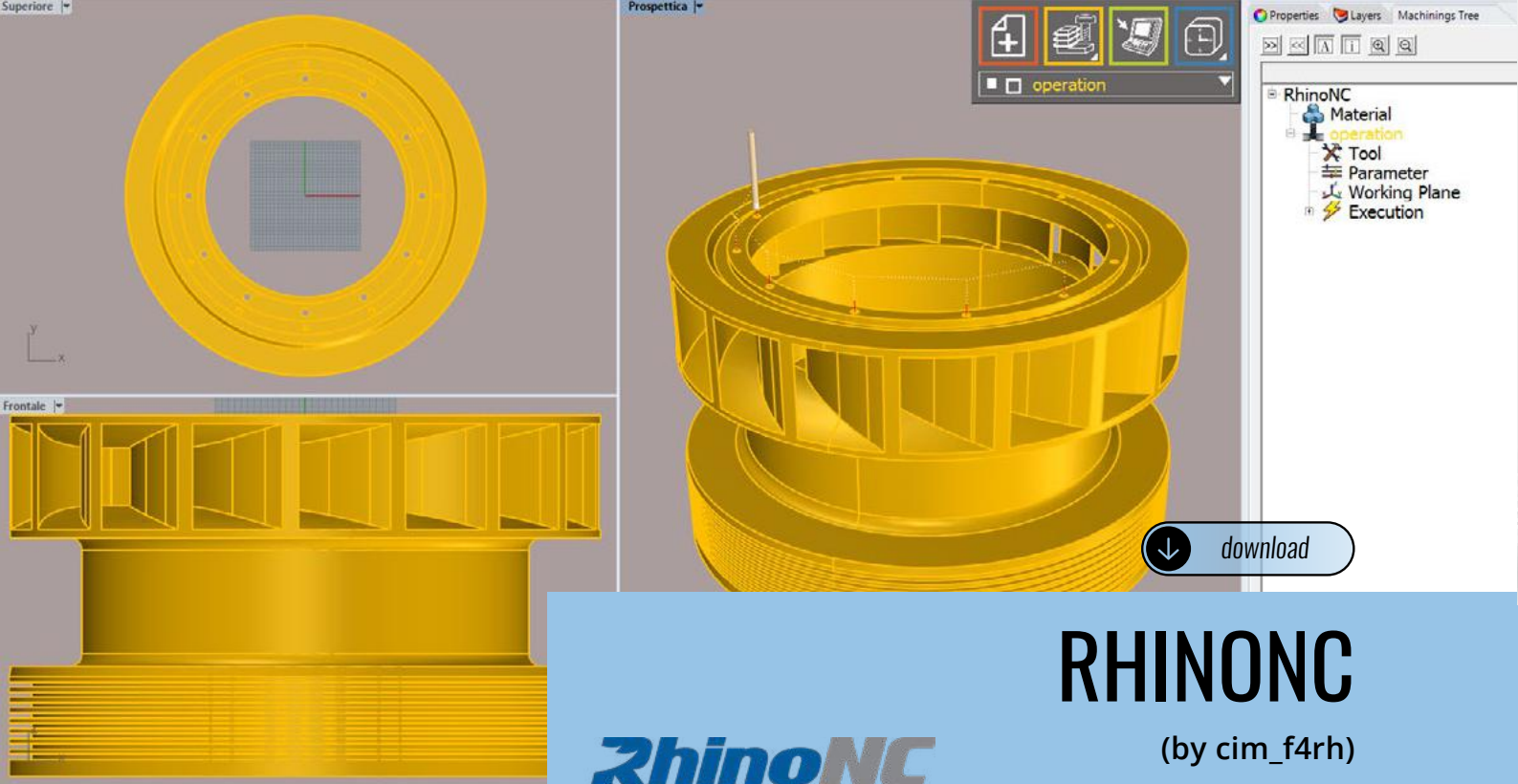
Image by hlhdxyz

**AIR for Rhinoceros is not a typical render; it is an Artistic Inspiration Renderer based on AI Refinement technology that generates design inspiration for you.**



Simply adjusting parameters or even keeping default settings will provide you with endless "rendering pictures" in minutes, igniting your creativity

and aiding in the deliberation of design schemes. Currently, it supports architectural design, interior design, urban design, landscape design, etc.



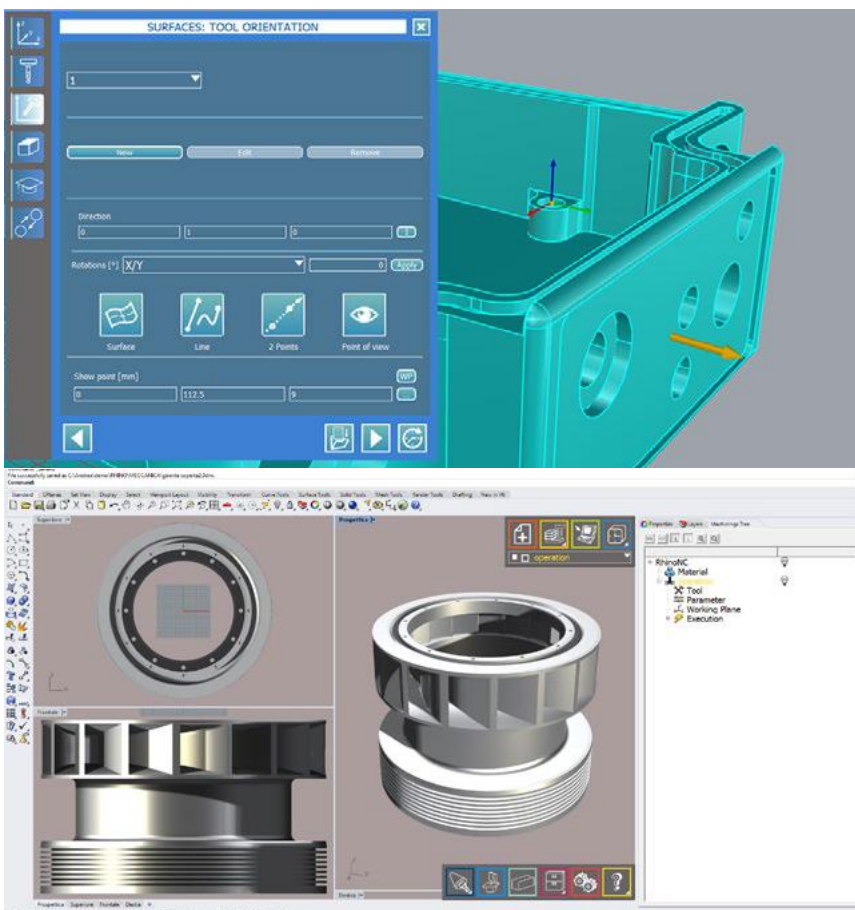
**RhinoNC**  
 CAM Solution Integrated into Rhinoceros®

# RHINONC

(by cim\_f4rh)

Category: CAM

RhinoNC is the CAM solution developed to create and manage any working strategy on machining tools for industrial manufacturing. Its flexibility and ease of use make it highly versatile software for milling, turning, welding, cutting, and much more.



Thanks to the interface fully integrated into Rhinoceros, the operator can manage the CAD/CAM manufacturing process in a single solution.

The excellent level of customization allows users to create tool paths with simplicity and effectiveness while enabling them to manage different machines in different fields of production with only one solution.


Multiple application areas are available with RhinoNC: mechanics, stamp and prototyping, wood, marble, textile cutting, incisory, jewelry, paper industry, and much more.





## SAVANNA3D for Rhino 7


# SAVANNA3D



A library containing over 1,600 detailed 3D architectural models in the 3DM file format, plus a few parametric Grasshopper definitions to create parametric models.

[View the catalog here!](#)

All these blocks are 100% NURBs, SubDs, or GH Parametric definitions made in Rhino 7. PLUS, discover the new blocks created for you; all are SubD models included in Chapter 7, which provides for cocktail glassware and lounge chairs.



[Subscribe to the SAVANNA3D R7 library](#) to download the entire library; it's yours to keep for as long as you like. The subscription includes all 1,600+ blocks PLUS any new blocks added sporadically during the twelve-month subscription.

Get around **40 FREE blocks** from the library by downloading chapter 2.1 for free! + **Enjoy 20% off** with coupon code: RHINO3DEDUCATION20 at checkout for a limited time!

# ***Electrifying the Road:*** Unleashing Innovation in Argentina's Industrial Design Course with Rhino-Powered Electric Go-Karts

Joaquín Laborda's Industrial Design Course at Universidad de Palermo takes on the challenge of designing an electric go-kart.

Joaquín Laborda is an Argentinian industrial designer who graduated from the University of Buenos Aires (FADU, UBA).

He owns **Trum Design** and has provided services for international companies and startups for 20 years, offering product development, 3D modeling, and visualization. Its client portfolio includes 3M, Honeywell, Bose, Mattel, Hasbro, Disney, BH-Diamonds, and Pepsico.



Modeled and rendered by  
Isabella Ferreccio.







The students could draw inspiration from popular brands, designers, movies, or other sources. They began with research, sketching, and creating foam or clay models. Then, they used Rhino software to create detailed 3D models and prototypes.

Joaquín praised the flexibility and speed of the software in creating complex organic forms.

They combined SubD and Nurbs techniques and, finally, created their final prototypes using digital CAM processes and systems.



The results were exceptional, with Anamanela Arizmendi (model 1), Gonzalo Binello (model 2), Martina De Benedictis (model 3), and all the participants displaying exemplary 3D modeling and rendering skills.



Are you interested in seeing more projects made at Laborda's course?





# 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:

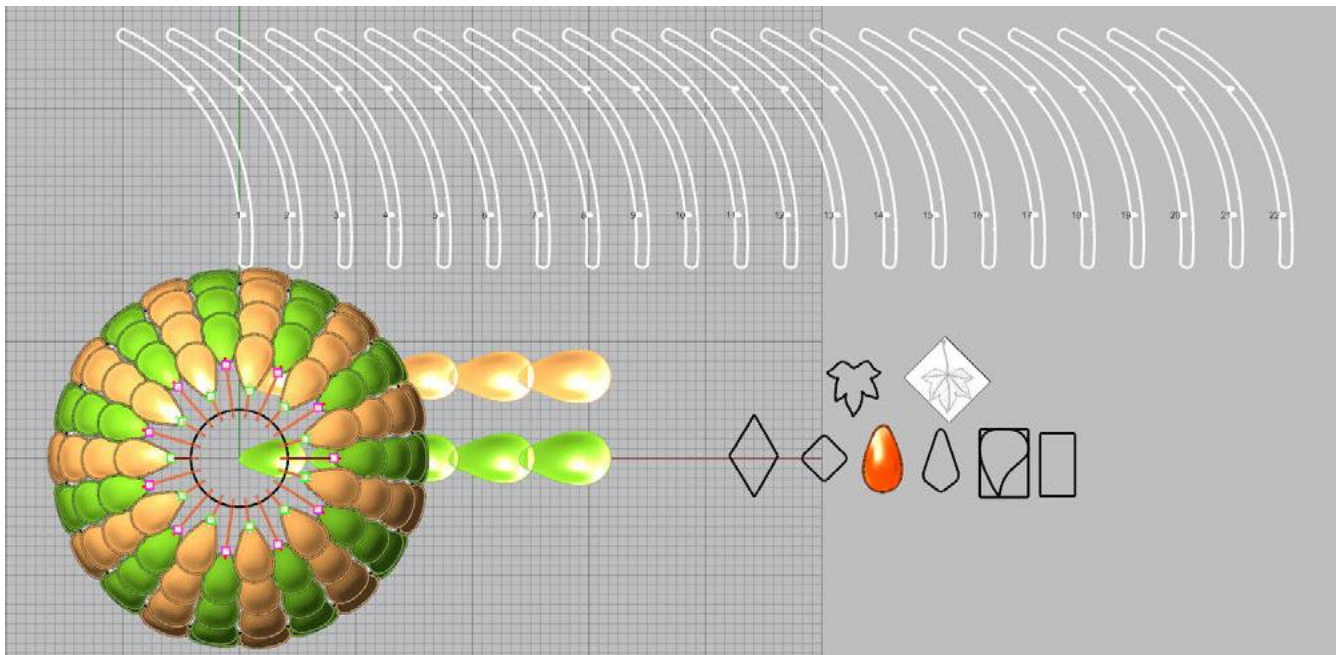
- You can log in and post your RhinoFabStudio events on the RhinoFabStudio event schedule.
- Your details and event schedule will be posted on the Rhino News Blog.
- Your event schedule will be announced in the RhinoFabStudio News e-mails monthly.

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





## Pinecone Patterned Luminary

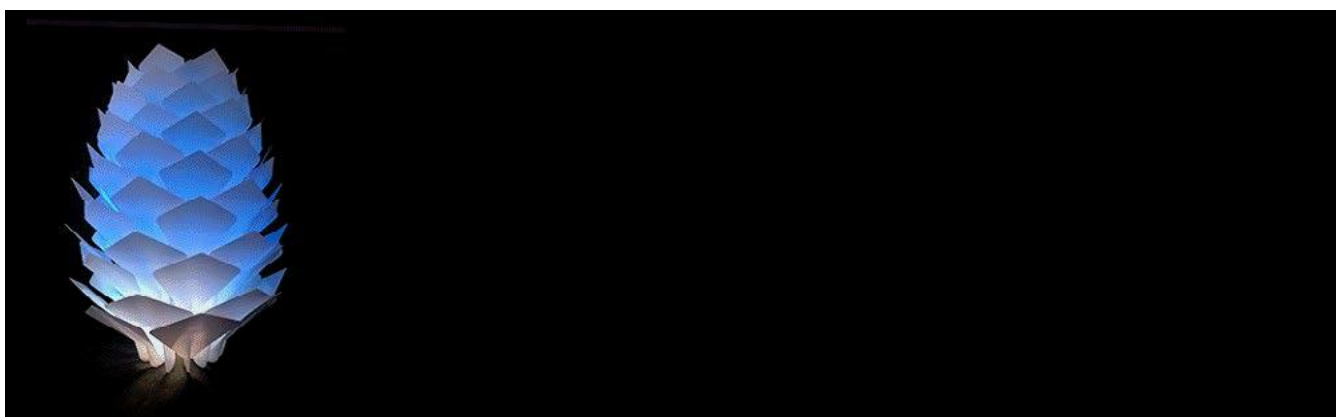
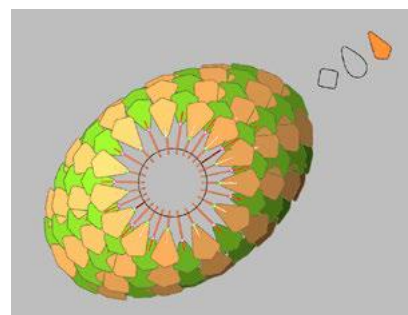
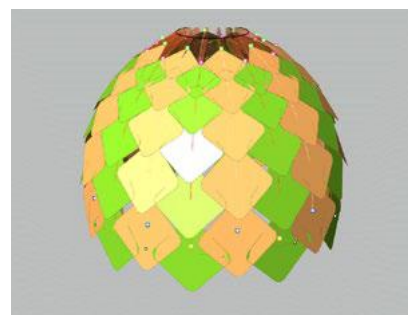


The Pinecone Parametric Lamp is an enchanting lighting creation inspired by the shape of pinecones found in nature. This project seamlessly combines the elegance of natural forms with the capabilities offered by Grasshopper.

Developed under the guidance of Andrés Gonzalez at McNeel Miami's RhinoFabStudio, the lamp project boasts an array of captivating visual options derived from experimenting with component shapes.

With the component shape solidified, the fabrication process took shape. Utilizing 1.5 mm HIPS (High Impact Polystyrene) sheets with a durable 1/8" frame, the components were meticulously cut using a laser cutter machine.

More info about the Miami's RhinoFabStudio®?





A woman with long hair, wearing a dark jacket and black pants, is sitting on a wooden structure made of curved planks. She is looking up at the sky. The structure is made of many vertical and horizontal wooden planks, some of which are curved. The planks are connected by metal bolts and nuts. The structure is outdoors, and there are trees in the background.

# Re-Emerge Pavilion:

A Sustainable Triumph  
of Parametric Design





**Architectural Association (AA) Emergent Technologies & Design (EmTech)** Post-Graduate Programme and **Hassell** in London have collaborated to create a new pavilion, called Re-Emerge, in Bedford Square. The pavilion was open to the public for a month in November 2021 and stood as a testament to the boundless possibilities of recycled materials and parametric design.

For this project, **Hassell Studio** set the challenge to keep the carbon footprint to an absolute minimum, exclusively utilizing reclaimed timber. This unique directive allowed the students to pioneer a mindful approach toward the environment.

This collaboration resulted in the Re-Emerge Pavilion winning an **Architizer A+ Award** in the Architecture & Collaboration Category.



## From Waste to Wonder

The designers embarked on aligning recycled timber with the pavilion's overall design concept. They devised a structural system comprising volumetric timber modules crafted from wood pallets that were scored and kerfed. By connecting two kerfed pallets, each with a 120° curvature, through lap joints, they created a stiff, brick-like 'diamond' module capable of sustaining loads in vertical and horizontal arrangements. These diamonds were then organized into structural ribs, significantly reducing the need for secondary materials in the



joinery system. Further timber planks were incorporated for additional structural support, resulting in a lightweight yet robust system that embraced the principles of ecological impact right from the early phases of the design process.

## Empowering Sustainable Design through Grasshopper

One of the critical enablers of the Re-Emerge Pavilion's success was the employment of parametric design tools, with Grasshopper playing a pivotal role—a novel computational workflow integrated generative form-finding, material computation, structural performance, and life cycle assessment. The students developed a custom C# component for spring-back



behavior, connection locations, and kerfing patterns, while the Karamba plugin facilitated Finite Element Analysis (FEA) to ensure seamless load transfer through the network of ribs to the foundation. The OneClick LCA plugin for Grasshopper enabled the reclaimed timber plank's Life Cycle Assessment (LCA), ensuring every design aspect adhered to sustainability goals. Moreover, the Wallacei plugin empowered multi-objective optimization (MOO) algorithms, allowing designers to navigate conflicting design considerations easily.

## Overcoming Recycled Material Hurdles

Despite its awe-inspiring success, the Re-Emerge Pavilion encountered its fair share of challenges. Dealing with varying dimensions of recycled timber planks, uncommon in traditional construction, demanded meticulous adaptation in the computational process. A significant challenge emerged during construction when we experienced frequent snapping of timber planks, necessitating replacements of comparable dimensions. This unexpected hurdle required us to revisit the computational process, ensuring the structural integrity of the pavilion while accommodating the irregular material sizes.

Moreover, sourcing suitable recycled timber planks for structural use proved to be an intriguing challenge. Exploring timber recycling facilities throughout London, the team visually evaluated each piece, striving to ensure they met the stringent structural requirements of the pavilion. While this process led to revisions in the final design; it





Emphasizing ecological impact, the pavilion's research agenda centers on sustainable production in a world with limited resources.



also highlighted the importance of careful consideration and attention to detail when working with reclaimed materials.

## The Re-Emerge Pavilion's Impact

The Re-Emerge Pavilion transcended its role as a mere architectural structure by engaging the local community and promoting sustainability and recycling initiatives. Students at the AA School eagerly volunteered to participate in the pavilion's construction, immersing themselves in themes of sustainability and upcycling. In conjunction with the opening of the Pavilion, a symposium was co-organized with Hassell, delving into sustainable wood construction, zero waste, and upcycling of construction materials. Distinguished speakers, including Xavier De Kestelier (Head of Design Hassell),

Amin Taha (Architect & Founder Group Work), Hester Van Dijk (Designer & Founder Overterders W), Elif Erdine, and Milad Showkatbakhsh, took the stage, sparking an open discussion among AA students and igniting a profound sense of sustainability in the minds of the next generation of designers.

## Lessons for the Future

Beyond the project's success and community engagement, the knowledge gained from the Re-Emerge Pavilion carries far-reaching implications for the future of parametric design and sustainable architecture. By optimizing material use and reducing waste during construction, parametric design tools can become the cornerstone of circular design principles. Future developments

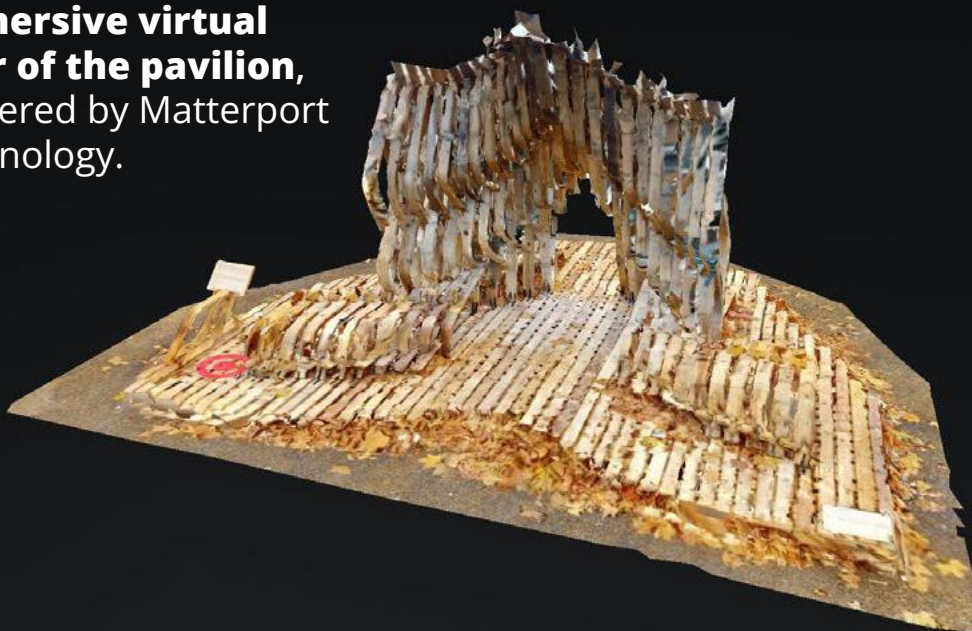


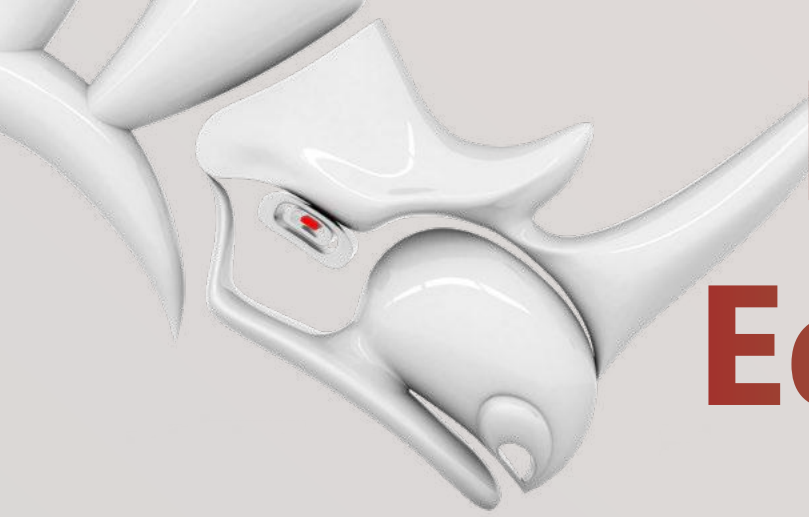
may explore even more sophisticated optimization algorithms, accounting for a broader array of factors. Moreover, the seamless integration of parametric design and sustainability may usher in an era of responsive design, where structures adapt to their environment, enhancing performance and reducing their ecological impact.

The Re-Emerge Pavilion is a testament to the transformative power of collaboration, sustainability, and design innovation. Its architects, engineers, and designers have illuminated a path towards a future where structures resonate harmoniously with the environment. As the architectural world embraces these learnings and pushes the boundaries of design, projects like Re-Emerge inspire us to envision a greener and more sustainable tomorrow.



Click to embark on an **immersive virtual tour of the pavilion**, powered by Matterport technology.





# 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  
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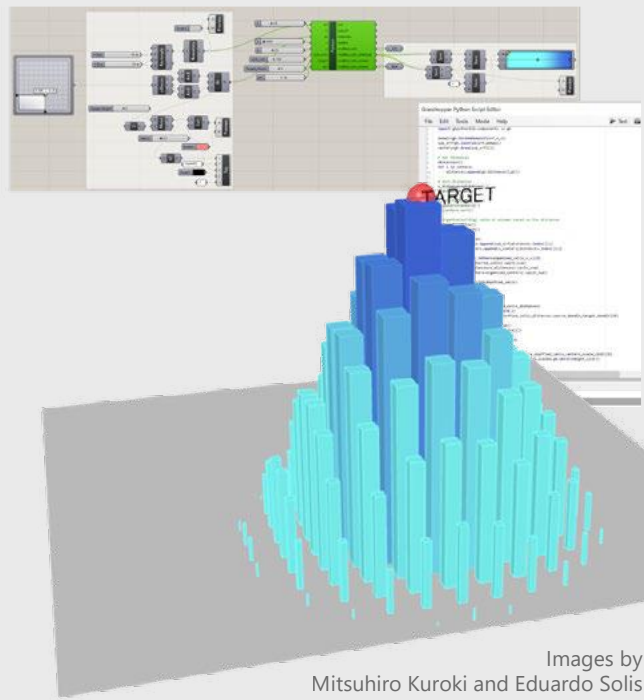


## FREE COURSE

Python is a well-established component in Grasshopper. It's easy to learn and has a fast-programming language. Enroll in this free introductory course and enjoy learning how coding works in Grasshopper!

In this course, you will learn the essential components of GhPython, like variables, operators, etc. Also, some crucial conditionals for loops and while loops. In addition, you will understand its functions and how to make points, curves, and shapes, divide them, and make complex geometry like snowflakes and anti-snowflakes.

[▶ take this class now](#)



Images by  
Mitsuhiro Kuroki and Eduardo Solis



**Fee: \$59.95**

In this course, you'll use GhPython in Rhino 7 to get a deeper understanding of Python in Grasshopper, create geometries, and get to know the deeper layers of Python. You'll start with some data types and built-in functions such as tuples and dictionaries. Then you'll look at the format method and how it works with random to create unique colors with Python that help us generate animated geometries. Also, you will go over the difference between Rhino-Common and Rhino-scriptsyntax.

[▶ take this class now](#)

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

# Learn & Engage

## Online self-paced courses



2023 Complete Parametric Design with Rhino 3D: Zero to Hero

[▶ take this class now](#)



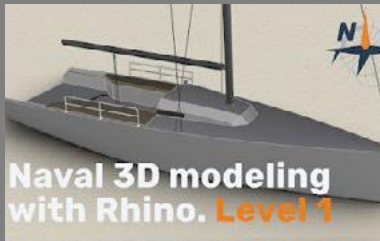
Unlock Your Creativity with SubD Modeling in Rhino 7

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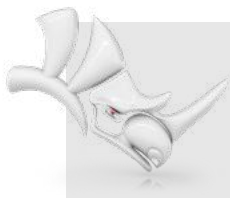
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## DesignMorphine Ph.D. program in computational design







New to Rhino? Look for tutorials on our [Rhino Learn](#) page.

Authorized Rhino Trainers provide [one-on-one, on-site, or customized training](#) if you are still looking for a course offered near you.

## Events

### Python AEC Camp by PAZ Academy

Date: August 23-25

Location: PAZ Central, Zurich

Designed specifically for professionals in the BIM world, this course will introduce you to Python programming fundamentals and its integration with Rhino and Grasshopper.

### DLAB two-week program

Date: August 31 - September 16

Location: AA London HQ's

DLAB experiments with the integration of advanced computational design, analysis, and large-scale prototyping techniques.

### FOOTPRINT3D by Footwearology

Date: September 22-23

Location: Barcelona, Spain

The event that brings 3D printing and other digital manufacturing technologies to the footwear industry, layer by layer.



The Ph.D. program in computational design provides a rigorous curriculum that equips design scholars with the knowledge and skills necessary to leverage the power of computational design in creating innovative and sustainable design solutions. The program emphasizes the importance of a multidisciplinary approach integrating cutting-edge computational techniques with design principles to develop a comprehensive understanding of the interplay between design, technology, and innovation.

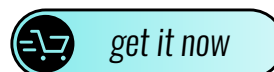


## The Essential Guide to Digital Jewelry Design: Freeform and Computational Design in Rhino and Grasshopper

Authored by Akiyo Matsuoka, Eva Tucek, and Atsuo Nakajima, all Authorized Rhino Trainers (ARTs), this guide unveils the potential of utilizing Grasshopper algorithms to transform design processes. Through these algorithms, designers can craft intricate modeling procedures, initiate simulations, refine designs through iterative modifications, and achieve optimal outcomes by manipulating algorithmic parameters. The book demonstrates how to masterfully recreate designs digitally, fostering an understanding of cutting-edge computational design techniques.

The guide's content spans foundational concepts to advanced methodologies,

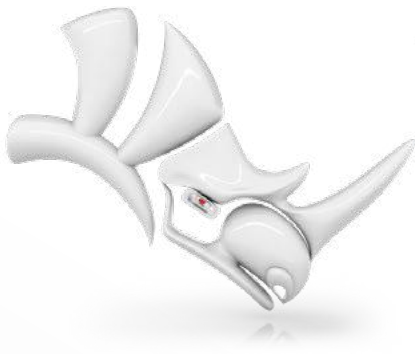
enabling readers to construct simple and complex jewelry designs. The authors' expertise in Rhino and Grasshopper is shared through free video tutorials and in the book, offering practical insights into creating jewelry designs that exemplify the possibilities of these computational tools.



Questions on this book?  
**Email the authors.**

**Find all the models you need to complete your exercises.**





# Rhino<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)**



That's what friends are for

Posted by 11150



Dune | Speeder  
Concept

Posted by Lee Rosario

# 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!**



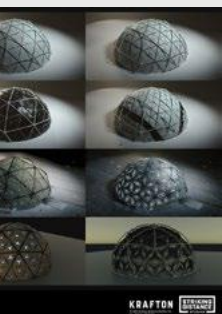
I made a game with Rhino  
+ Gh and UE 5

Posted by Gediminas  
Kirdeikis



## The Callisto Protocol - Concept Art

Posted by Souderdesign



# Mechanized Utopia Compilation

## Independence Day Resurgence Tug Design

Posted by Scott Schneider



## Star Trek - The Starship Cygnet

Posted by David



## Lobo Rover Concept Design

Posted by Luis Lobo



## New plugin to share?

Have a plug-in for Rhino or Grasshopper?  
**Email us** to add it to the food4Rhino website.

## Get your project published!

Submit your impressive project for consideration in our Rhinozine! Complete **this form** to share your work. Review the requirements in the same link.

## Know about exciting new courses ready for promotion?

We encourage you to share the course information by **email**.

## Rhino experts needed!

Find more job listings on our **Rhinoceros website**

If you have a job opening, just fill out **this form** to list it on our Rhino Jobs page. It's free!

# Reach out



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Rhinoceros Forums

GJD3D



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