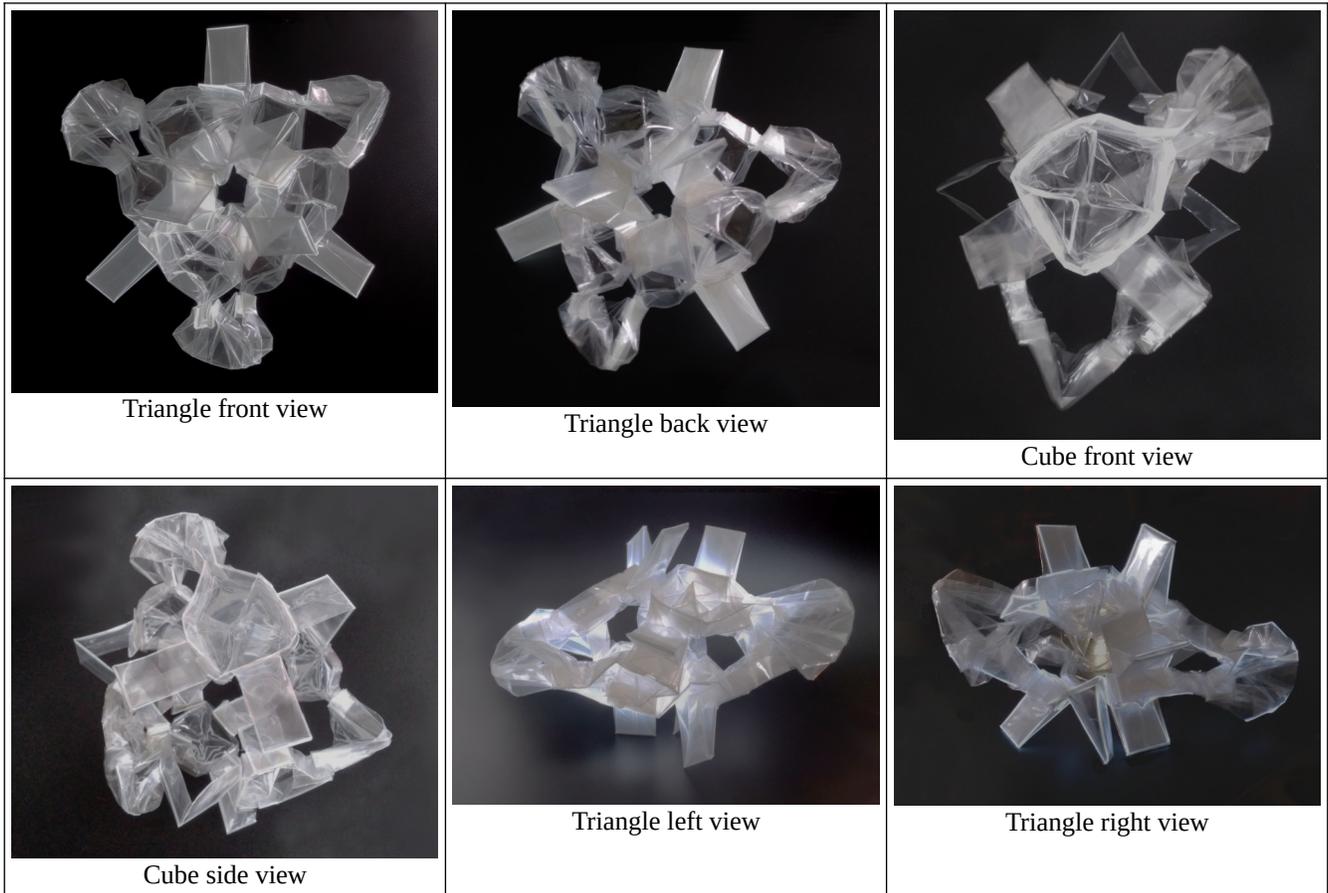


The Balance of AI and Art in Plastigami



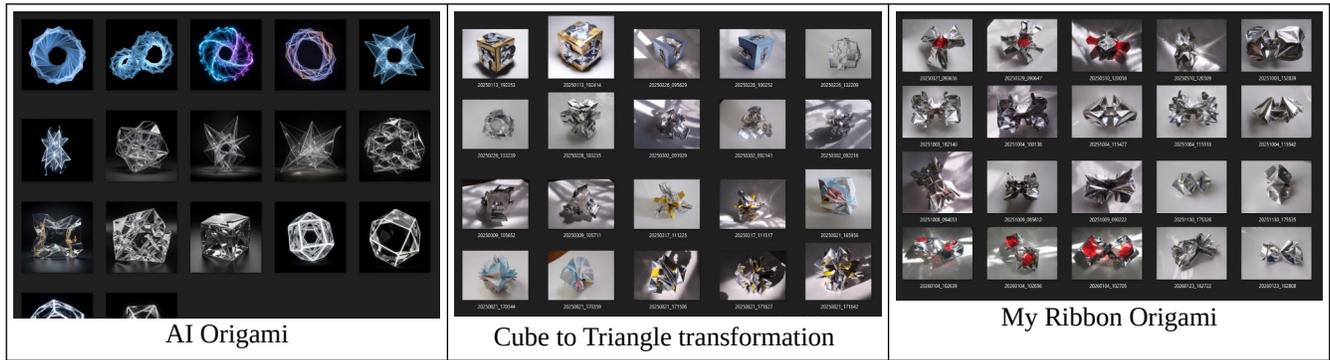
This AI plastic origami (plastigami), titled ***Ribbon 114027***, expands the technical and conceptual boundaries of **multi-modular origami** and **action origami** through a recycling-driven concept, AI-assisted workflows, human creativity, problem solving and a new transformation-oriented ribbon-inspired origami design. The origami consists of **three main bodies and nine connector units**, forming a kinetic structure capable of transforming between a **cube and triangles**. It demonstrates how established origami techniques can be extended in the era of AI without compromising artistic quality.

My Recycle Concept

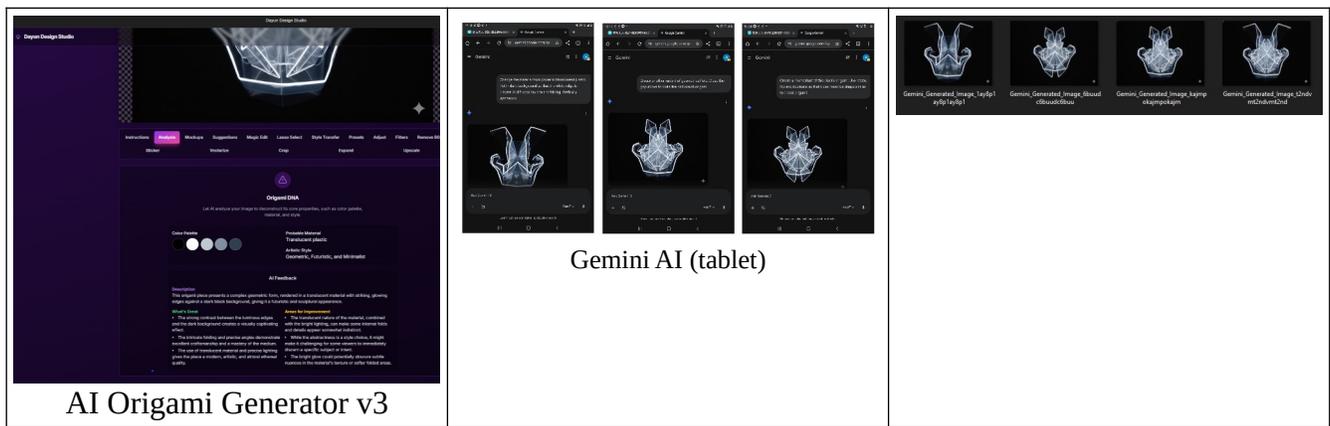
The primary material—discarded plastic book wrappers, approximately $(37.5 \times 25.5 \text{ cm}) \times 3$ — originates from failed experimental waste created while I was testing a new small staple-iron tool. In alignment with my recycling concept, the design prioritizes reusing this material and transforming plastic waste into a new origami artwork, rather than generating additional waste. The finished origami measures approximately 21 cm in height in its triangular form and 13×13 cm in its cubic form.

1. Pre-Folding: Conceptual Design & Aesthetic Expansion

In the first stage, I use the latest **Generative AI technologies**, including my self-developed **AI Origami Generators** (open-sourced on GitHub¹) and **Nano Banana** of Google, to explore new design ideas and structural possibilities. Combined with photographs of my selected origami works, these AI-generated origami images are used to create a **mood board**.



For me, a mood board functions not only as a graphic design tool but also as a method for developing artwork. It gathers visual elements to define an aesthetic direction, stimulates inspiration, and consolidates abstract ideas into a single creation that guides origami form, proportion, efficient use of material and transformation logic. After brainstorm, I also use **Gemini AI** to draft and refine the design concept further.



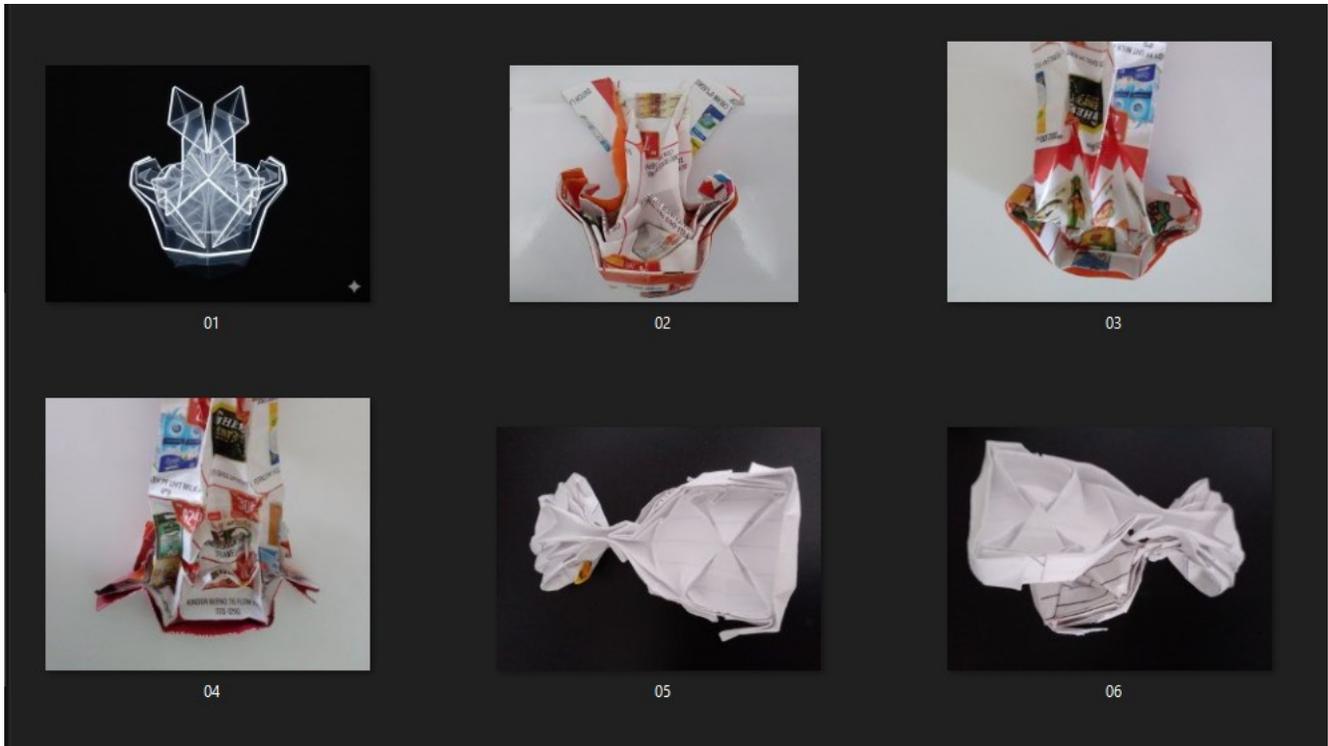
Beyond recycling, this origami design is guided by my visual language or **art concept** of ribbons, where their flowing continuity and layered elegance are detached from their functional role in fashion design and translated into a rigid modular action system. This aesthetic reference enhances visual coherence while informing how origami modules interlock and transform.

Before any physical folding begins, I conduct **online search** to ensure that no similar origami module already exists. This step safeguards originality and positions the work as a genuine technical expansion rather than a variation of existing designs.

2. Folding: Flow State & Physical Validation

The folding stage is driven by a deep **flow state**, where creativity accelerates, awareness of time disappears, and attention becomes fully absorbed in artistic innovation. I regard origami as an art form rather than a craft because this state brings the same sense of fulfillment I experience when creating oil paintings or practicing calligraphy.

Because the duration of this flow state cannot be predicted, the free AI tools I use help minimize time spent on peripheral processes, allowing creative energy to remain focused on folding innovation.



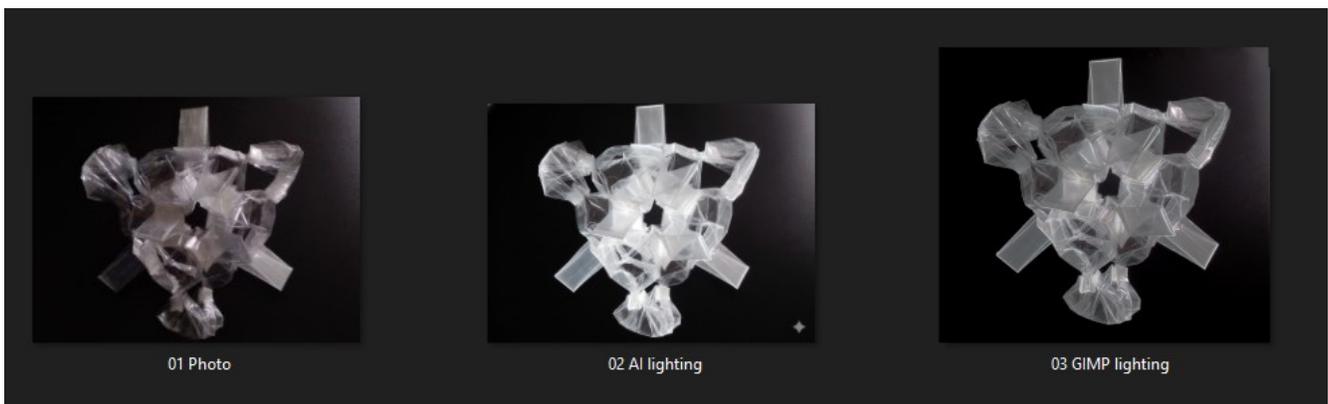
Rough paper prototypes are first created to simulate the final plastic origami, enabling rapid testing of proportions, technical precision, and action mechanics. Multiple paper trials are conducted before designs proven workable as action origami are translated into plastic. For plastic origami, an additional time-consuming but unavoidable process—**pressing**—is required. Without sufficient pressing, the plastic origami cannot reliably hold its shape.



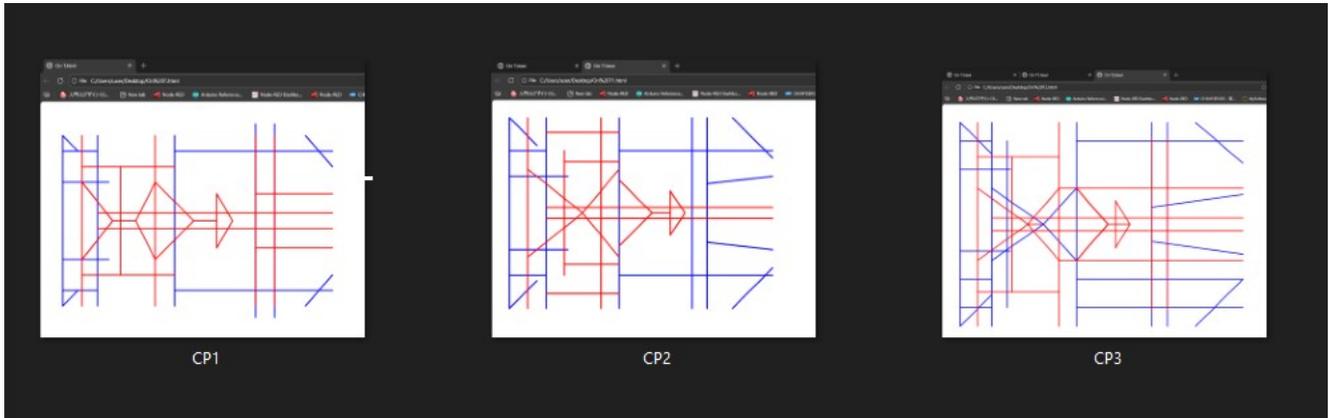
After assembling all origami units, an issue emerged: due to the slippery surface of the available plastic, some connections failed during movement. To resolve this, double-sided tape was discreetly added inside selected folds to ensure stability and smooth shape transformation.

3. Post-Folding: Refinement & AI-Agent Experimentation

In the post-folding stage, due to dim lighting during the rainy season and the lack of professional photographic equipment, I refine the lighting and visual clarity of selected photographs using **Nano Banana** and **GIMP** (open-source software).



An experimental **AI-agent** workflow is then explored to generate AI-based origami crease patterns² from the completed plastic origami. While the results are currently unsatisfactory due to an insufficient dataset of origami crease patterns for machine learning, this attempt represents an ongoing and active effort to integrate AI tools into origami art practice.



A Balance in the Recycling Loop

Ribbon 114027 is not only a new origami creation in the human world but also within AI systems. Although AI origami generator can generate trillion of origami images, this origami did not exist in any known large language model(LLM) dataset or AI origami image corpus before appearing on the internet. Once absorbed by AI through machine learning, I can reuse it as a new source of inspiration in future AI-assisted design processes. This conceptual recycling loop is part of the balances of my approach to art and AI.

References

1. **Open-source AI Origami Generators (GitHub):**
<https://github.com/dayunchin/AI-Origami-Generator-v1>
<https://github.com/dayunchin/AI-Origami-Generator-v3>
2. Initially, I used AI assistants to generate origami crease patterns but shortly after publishing the methods in my third book, AI agents began to replace AI assistants. AI technology evolves rapidly, but I believe humans can always adapt to new eras.