

# AI3D Desktop: Creating 3D using AI in Skeuomorphic XR and The Future of Work

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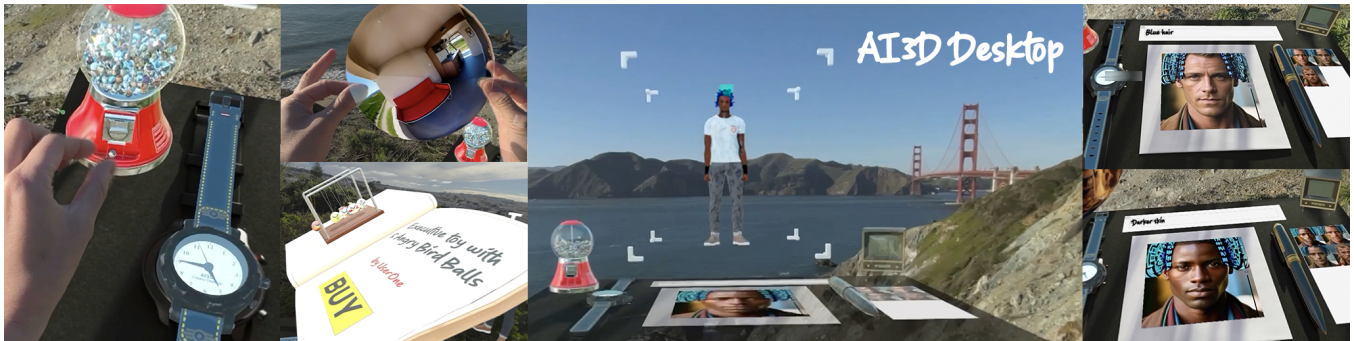


Figure 1: Left to right, top to bottom: Gumball Worlds Machine AI3D Desktop Toy, Pinch-blowing a gumball into a Blockade skysphere, AI3D User-Created Toy Catalog, AI3D Desktop Vision Pro app used while hiking Battery Buffs in Presidio National Park in San Francisco, LCM prompting blue hair, LCM prompting darker skin

## ABSTRACT

AI3D Desktop is an XR app platform that lets anyone create 3D models using AI in an intuitive and delightful way by using skeuomorphic design motifs. Innovations include: Creating virtual humans and other AI3D objects using a hybrid desktop draft-to-reticle approach, AI3D user-created-content e-commerce as a virtual catalog, and aiQuery and sQuery language layers in RealityScript to easily chain AI models and spatial computing HCI elements together (also, as represented as gears and cogs!). We showcase such approaches for all AI3D methods: text to 3D, text to image to 3D, image to 3D, 3D to 3D - and also multimodal AI3D methods for text/image/3D to scene, and text/image/3D to interactive 3D. The current implementation is for Apple Vision Pro.

## CCS CONCEPTS

• General and reference → Design; • Computing methodologies → Artificial intelligence; • Human-centered computing → Human computer interaction (HCI); Interaction paradigms; Graphical user interfaces; Mixed / augmented reality; Interaction design; User interface design.

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## KEYWORDS

spatial computing, AI3D, AI pipelines, creator app

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## 1 INTRODUCTION

Humans live in a 3D world and experience 3D objects in real life on a daily basis, but industry-standard 2D software for 3D creation involves complex hard-to-learn and slow-to-use interfaces. In the past year, AI methods for 3D creation "AI3D" has evolved to the point of being usable for production-ready work. We utilize naturally intuitive real-world HCI motifs in spatial computing XR with AI3D methods to create a new type of "accessible-to-everyone" end-to-end 3D creation suite - that also includes basic interactivity and user e-commerce, such as creating AI3D desktop toys.

## 2 THE AI3D DESKTOP

### 2.1 Extracts from Skeuomorphically Intuitive Motifs

**2.1.1 Drafting Desktop and AI3D Creation Reticle.** We feature a hybrid between a business and drafting desktop motif with gen history on one side and the main drafting focus on the front.

## 2.2 Common Desktop Items

Common desktop items have utility - a 3D wristwatch helps you understand how much time has elapsed for certain AI generation processes. A desktop antique TV can play tutorials. User-created Desktop Toys adds both fun and virtual goods commerce.

## 2.3 Paper

Paper is what you iterate your ideas on. Single sheets of paper are for quick notes or quick sketches. We chain different AI models together for these quick iterations.

This is like our Napkinmatic app [Chang 2023a] [Chang 2023b], but here the focus is to stay within spatial computing and have AI fully generate each "napkin" sketch for you.

**2.3.1 Trash Bin.** The trash bin is what you hit when messed up.

**2.3.2 Pens.** The pen tool in a drawing app implies free form drawing. In this first iteration, we have the pen tool activate the AI3D image to 3D process.

**2.3.3 Notebook.** The notebook is for long form text, say text to scene design, such as we showed in 2020 [Chang 2020b] [Chang 2020a].

## 2.4 Desktop Toys

Desktop toys can be created from simple text to code applied to the generated 3D objects.

**2.4.1 Catalog for Virtual Commerce.** Inspired by the Sears Catalog [DeLuca 2023], which can be likened to the Amazon [Amazon [n.d.]] of the Victorian era, each desktop toy can be a product in a virtual commerce catalog that other desktop users can buy to adorn their own AI3D Desktop with.

## 3 AI3D METHODOLOGY

The most intuitive flow so far involves having the user optimize the image generation in the image to 3D step. We can chain several different models together for that.

In general, AI3D methods attempt to help you get from your idea to a 3D model, faster.

### 3.1 Common AI3D Methods

The input is text, image, or a rough 3D model - and going through N mix of different models and other iterations - the output, is (ideally) the 3D model you want - generated in seconds and minutes, with no learning curve (in lieu of hours and years of learning).

**3.1.1 Text to 3D.** Text to 3D often contains several intermediary processes for refinement, from better image generation to preview mesh vetting.

**3.1.2 Image to 3D.** The input image for image to 3D can iterated upon in N steps from text or other images, before an image to 3D process.

**3.1.3 3D to 3D.** 3D to 3D lets you have AI refine a rough 3D model you constructed - say from Minecraft voxels.

## 4 XR HCI FOR AI3D METHODS

XR is capable of making each step of the AI process feel "more real," whether in a grabbable or otherwise spatial computing 3D way.

### 4.1 Gears of AI: Chaining AI "Cogs" Together

We hit the "Gaze Pinch to Lift" button to see "under the hood" the various AI models we are chaining together to create our end result. Each input is represented symbolically (image or text or 3D) by their input type on the input axle gear. Each model is represented as a cog. The output is represented as a connecting cog to another model, and ultimately onwards connecting to the ending axle gear. Below we show a sample Gear of AI chain.

### 4.2 Examine AI3D Inference Images in XR

Each piece can be examined as images you can "hold with your hands" in XR - from input to the intermediary output to the final output.

**4.2.1 Combining Cards to Dichotomy-Chain.** Inspired by a KarenX video [Cheng 2024], another skeuomorphic way to chain AI processes together is to pinch-grab "Pieces of Paper", one in each hand, in XR and combine them (assuming the chaining order is left to right, for example) to produce a resultant output as a third piece of paper or 3D model.

## 5 THE FUTURE OF WORK

We are the only ones who can really decide what aesthetics we want for our creations. Humans are extremely good at spatial understanding and sensory experiences in the real world. As AI takes over many of the boring-repetitive-non-sensory-non-spatial things that humans really ought not to do, one day, the future of work might require such a spatial computing desktop.

## 6 CONCLUSION

We were inspired by the clever-cute tactile physics of BumpTop [Agarawala 2009], and the then-visually-modern aesthetics of skeuomorphism that various MacOS and iOS desktops have sported. We have explored creating a complete 3D interactive creation suite using spatial computing HCI based on virtual 3D versions of real world objects, and we believe this is the path towards making 3D accessible in an expressive way for all!

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