

Dear User,
Congratulations on your purchase of the LemurKit & welcome to the HAL51 family!

1: WHAT IS IT? The Lemurkit is a multi-utility DIY STE(A)M kit that bridges the hitherto distinct worlds of 3D Computer Vision, Geometric Optics and AI. Putting together the components results in the **LemurBox**, a highly modular & customizable Pepper’s ghost diorama gizmo. You won’t need a single drop of glue or a screwdriver to build the device (Thanks to principles of frugal science and friction fit design). The vision behind this device framework is that of a BYOD (Bring Your Own Display) AI-ccessory hardware that does not enhance the silicon footprint of the planet and instead transforms your smartphones or tablets into a highly engaging AI powered 3D Extended Reality (XR) device.

2: HOW TO USE IT? The kit is shipped as a DIY kit made of laser-cut components made of bespoke black MDF (Medium Density Fiberboard), lighting units for backdrop lighting, customized high color-fidelity tinted acrylic for the beam-splitter screen, a mirror sheet & a V-shaped universal foldable stand.

Step-1: Build the device (Flip this page over to access the build manual)
Step-2: Attach the lighting unit provided to the lighting panel in the roof of the device & turn it ‘ON’
Step-3: Install our AI+3D apps onto your tablet or smartphone, set the screen brightness to max, connect any bluetooth interactive accessories you may have, place the smartphone into the projection chamber and voila! You have officially entered the LemurVerse (See Figure 1 for reference). The 3D digital asset is now projected into the diorama chamber below as a Pepper’s ghost and the user is able to view and interact with the 3D digital asset that can be a passive 3D digital model or an AI-powered ‘interactive 3D’ avatar.

3: HOW TO CUSTOMIZE IT? You may customize the LemurBox on so many different levels.
A: Diorama: Use the side-door to insert whatever figurines, landscapes and models you may have to customize the aesthetics of the “phygital” you want the 3D digital asset to be beamed into! The students in our DIY classes turned their units into Zoos, Museums, Aquariums & even Space-cabins!
B: Pediment and outer-casing: On our website, <https://hal51.ai/>, we provide free 3D printable .STL files to print your own custom pediments like the Greek parthenon & Japanese pagoda and insert them as custom pediments
C: Lighting units: By changing the color, temperature and intensity of the background lighting, the same 3D digital model can be animated differently! See Figure 2 that presents some of the lighting units our users have experimented with that resulted in remarkably fun & different XR diorama experiences for the viewer!
D: Reflector to the projection-chamber roof unit (Figure 3): In order to ensure that you don’t need an external camera to have a two-way holographic chat, we’ve provided a reflective mirror sheet that can be stuck to the LemurBox to reflect the foreground on to the back-camera of the smartphone placed inside the projection chamber. You may use the V-shaped universal foldable stand to control the angle of the mirror.

4: WHAT ARE THE SUPPORTING APPS? (Resource Page: <https://hal51.ai/apps>) We currently have released:
(A) LEMURSCOPE: 3D Model viewer & display app that displays pre-loaded as well as multiple on-device models in the .glb/.gltf formats. Connect a bluetooth mouse to rotate, move & zoom in/out with the 3D models! (Figure 4)
(B) AI-Chat apps: We offer 3 different variants: A plain version where the AI powered avatar appears in the middle of the screen and you can chat with it (Figure 5).The second variant allows you to also simultaneously load & interact with 3D models in the right part of the screen as you are chatting with the avatar! (Figure 6). The 3rd (LemurGram) entails a Nikola Tesla avatar that can perform voice-driven search for open source 3D models (Figure 7)
5: WHERE ARE THE RESOURCES TO LEARN MORE? All the content and tutorials we share will be via our youtube-channel: <https://www.youtube.com/@HAL51-AI> and our website: <https://hal51.ai/>.
It would mean a lot to us if you could follow and support us on our social media channels that can be accessed by our Linktree page: <https://linktr.ee/hal51.ai> (QR code is on the box that the kit ships with)



Figure-1: Building the device & usage



Figure-2: Lighting units tested by our early users

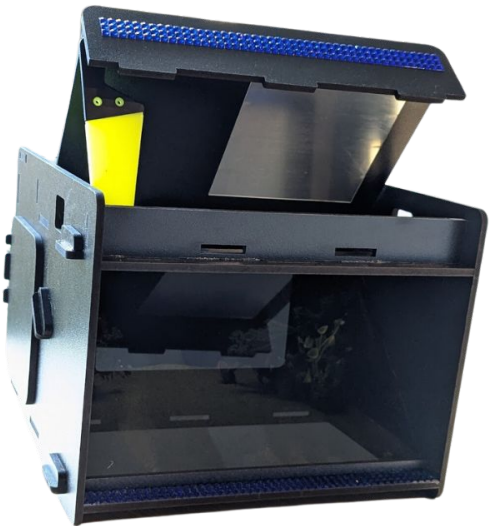


Figure 3: Mirror accessory usage

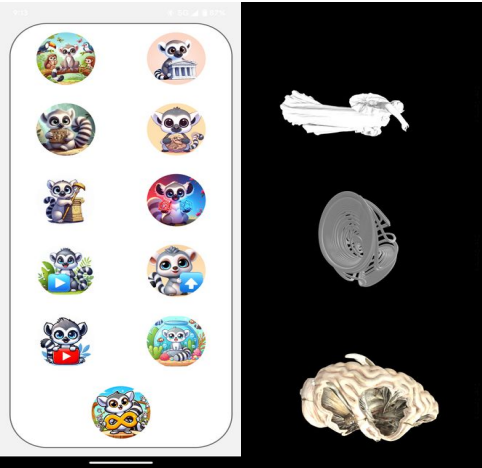


Figure 4: LemurScope Interactive 3D Viewer app

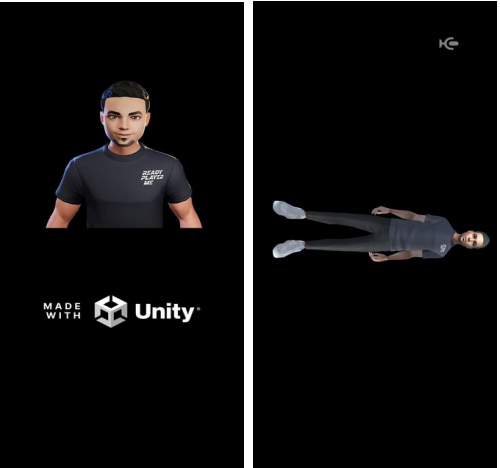


Figure 5: AI-vatar chat app

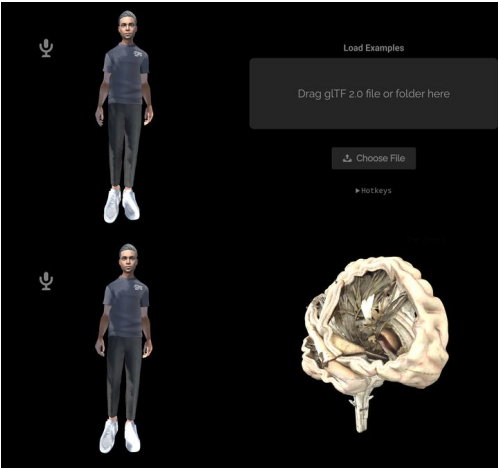


Figure 6: Alvatar chat app with 3D model co-loaded

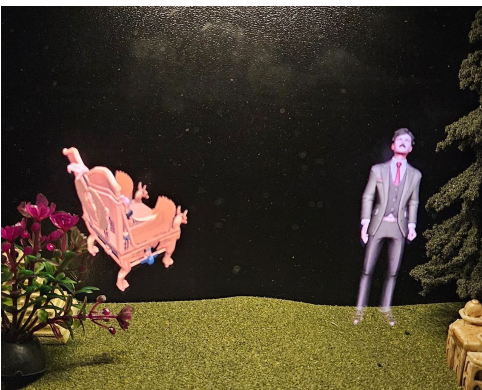
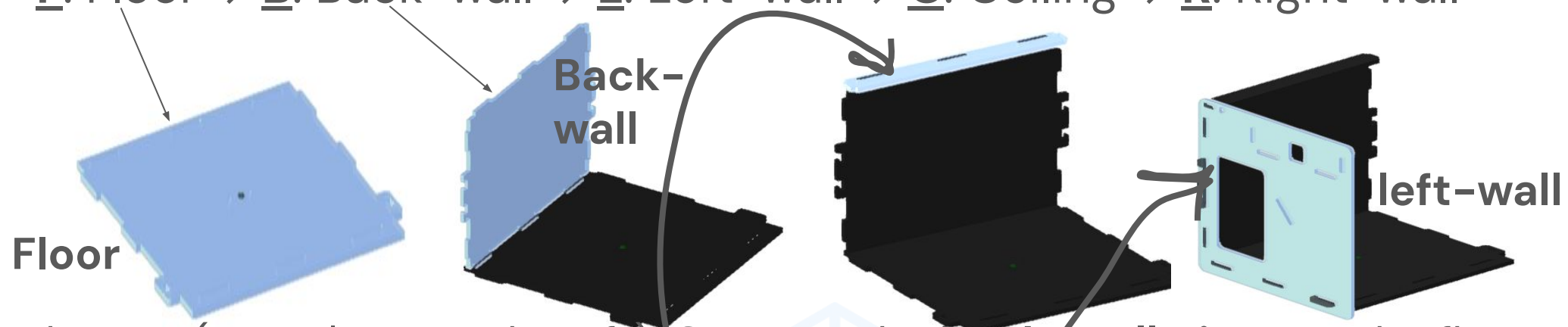
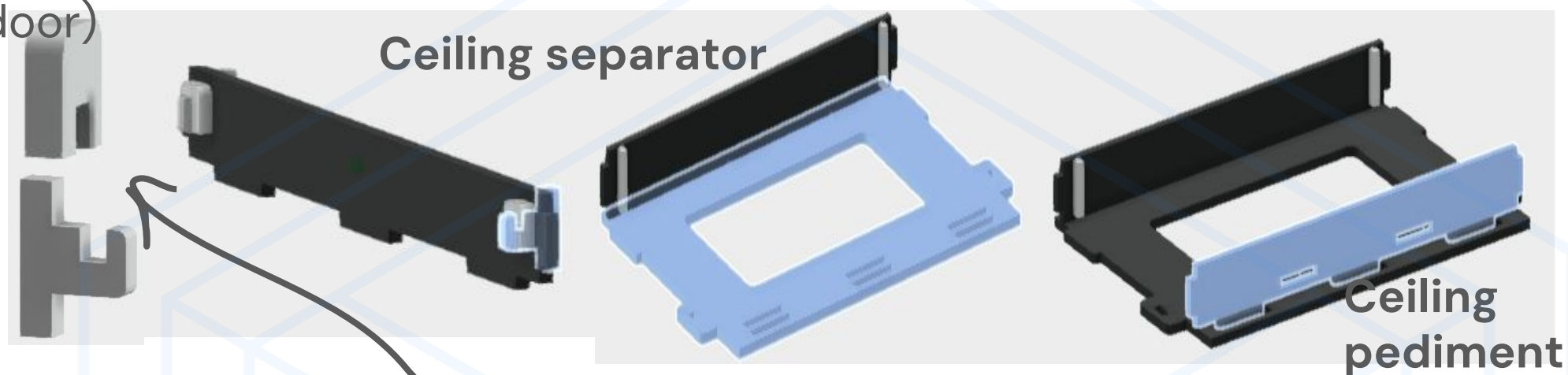


Figure 7: Lemurgram app

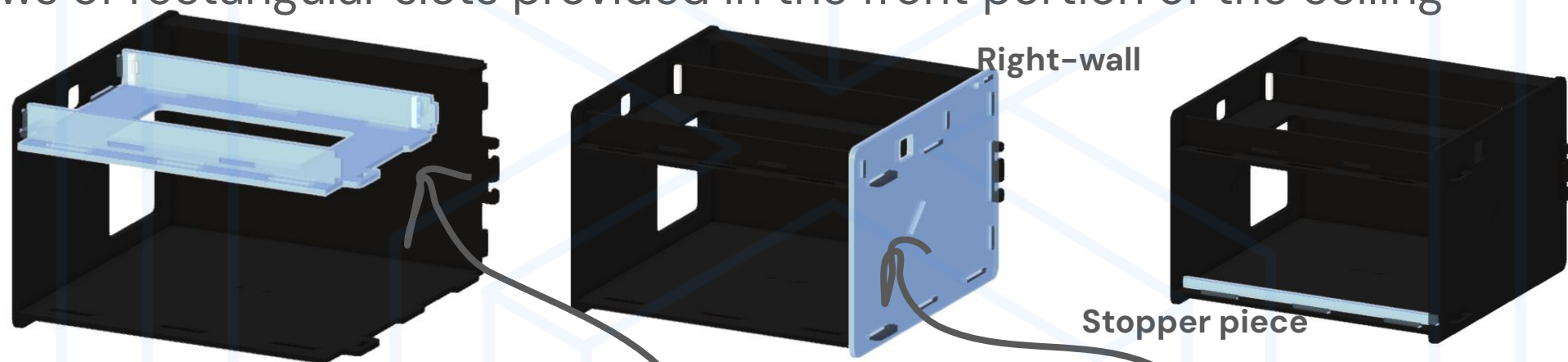
Just remember this mnemonic: **F**un **B**efore **L**abor **C**reates **R**ife!
This will guide the order in which you need to build the LemurBox.
F: Floor → **B**: Back-wall → **L**: Left-wall → **C**: Ceiling → **R**: Right-wall



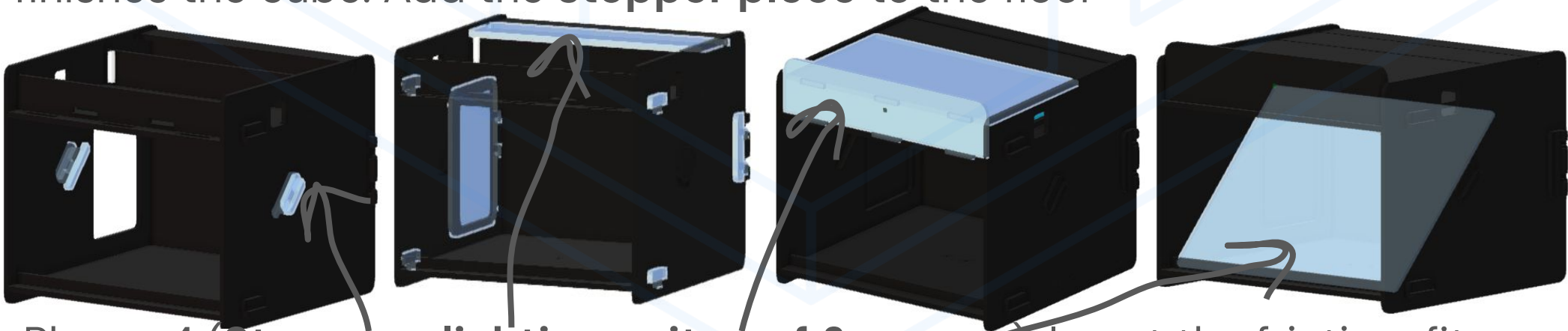
Phase-1 (FBL-Floor-Back-Left): Connect the **back-wall** piece to the floor. Then connect the **Back-to-ceiling joint unit** on top of the back-wall and finish up this phase by connecting to the **left-wall** (the one with the door)



Phase-2(Ceiling): There are two pieces that need to be attached to the ceiling piece. a) The **U-J shaped joints** embellished **Ceiling separator** & (b) The **Ceiling pediment** that needs to be inserted into the 1st of the 2 rows of rectangular slots provided in the front portion of the ceiling



Phase-3 (Cube-finish): Jam the **ceiling unit** built in Phase-2 into the FBL-Floor-Back-Left unit built in Phase-1. Now, bring in the **right wall** that finishes the cube. Add the **stopper piece** to the floor



Phase-4 (**Stoppers, lighting unit, roof & screen**): Insert the friction-fit stoppers in the holes provided to hold the structure together. Insert the lighting unit panel into the top of the ceiling unit and add the two 45 degree screen-holder units into the left and right wall holes provided. Finally, insert the acrylic beamsplitter screen and let it rest on the 45-degree screen holder pieces. Turn on the light and let the fun begin!
NOTE: The pieces have been numbered as well to make it easy to build

CEO’s letter & a \$5 reward offer

Dear Buyer,

We are a motley bunch just trying to build cool edutainment products with the hope of bringing learning & joy to our users’ life! We are **not** a corporate megalith with well oiled advertising engines and deep sinister strategy sheets. We are dads, dreamers and doers who used to work in Big-tech and Silicon Valley startups and are now embarking on this quirky exciting new journey to see if doing something fun, cool ,meaningful & useful can actually help us make some decent living ;)

We hail from the by-lanes of 3D Computer Vision, Maker spaces, AI/Machine Learning, Data Science, Meta-Optics & Hardware design. When we saw all of these incredible 3D datasets getting open sourced and AI large Language Models getting commodified, we envisioned a new way for humanity to interact with these assets guided by AI avatars by means of using frugal science principles. This is our first attempt at building a high utility STEM kit and we are approaching this venture with a huge dose of humility and gratitude. The LemurKIT can be physically extended in myriad ways using laser-cuttable and 3D printable extensions and pediments all of which have been open-sourced for free on our website. *Maybe you like what we’ve built and maybe you don’t. Either way, we’d love to know!!*

Please do reach out! Join our discord! Talk to us!

Our contact email is contact@hal51.ai (We read every single email and should you not get a personal reply within a week, we’ll compensate \$5 for every missed email!).

Also, if you live in the SF bay area and have questions, just reach out. Our CEO will personally drive to the nearest coffee shop, buy you coffee and cake and will help you with any build issues you have!

Given that we are really early in our journey, we are banking on word-of-mouth and peer backing to go big.

Therefore, we came up with this glorious little plan ;)
If you either :

- 1. Review us on Amazon *OR*
- 2. Tag us with a pic or video of your completely built Lemurbox on any of our social media outlets *OR*
- 3. Follow us / Subscribe on **three or more** social media outlets

You will receive \$5 via zelle!

Please share the proof (screenshot works!) via email including the word **“LoveLemurKit”** in the subject line and we will zelle you \$5 to the same email address.

Our social media handles are: (Just scan the QR code that’ll take you to our Linktree account: <https://linktr.ee/hal51.ai>)

TWITTER/X: <https://x.com/HAL51AI>

INSTAGRAM: <https://www.instagram.com/hal51.ai/>

YOUTUBE: <https://www.youtube.com/@HAL51-AI>

TIKTOK: <https://www.tiktok.com/@hal51.ai>

LINKEDIN: <https://www.linkedin.com/company/hal51-ai/>

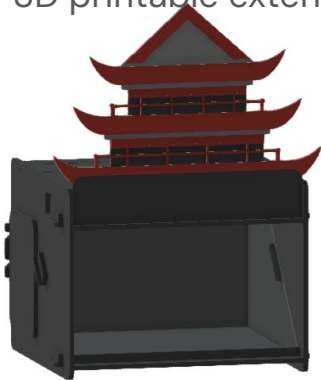
DISCORD : <https://discord.gg/mAf35Q9xnA>
(Scan the 2nd QR code to the right while on smartphone)



GALLERY:



3D printable extensions to the LemurBox (available for free on our website)





1. General Assembly Warnings

- **Sharp Edges:** The laser-cut MDF components and acrylic screen may have sharp edges. Handle with care to avoid cuts.
- **Small Parts:** Contains small components that could pose a choking hazard. Keep away from children under 8 years old.
- **Assembly Tools:** If additional tools (e.g., scissors) are used during customization of the diorama, ensure proper handling to avoid injury.

2. Electrical Safety

- **LED Lights:** The stick-on LED lights are low voltage but should not be tampered with. Avoid exposing them to water or moisture to prevent short circuits.
- **Power Source:** Ensure the smartphone or tablet used is in good working condition and does not overheat during prolonged use.

3. Optical Safety

- **Eye Strain:** Prolonged viewing of Pepper’s ghost holographic projections may cause eye strain. Take regular breaks to avoid discomfort.
- **Brightness Settings:** Ensure the smartphone/tablet brightness is not set too high to prevent glare or discomfort.

4. Fire and Heat Safety

- **Heat from Devices:** Smartphones or tablets may generate heat during extended use. Ensure proper ventilation and avoid placing the LemurBox near flammable materials.
- **LED Lights:** Do not leave the LED lights on for extended periods without supervision.

5. Material Safety

- **Acrylic Screen:** The beam-splitter screen is fragile and can crack or shatter if dropped. Handle with care and keep away from children.
- **MDF Components:** Avoid exposing the MDF parts to water or high humidity, as this may cause warping or damage.

6. Usage Environment

- **Stable Surface:** Place the LemurBox on a stable, flat surface to prevent it from tipping over.
- **Lighting Conditions:** Use in a dimly lit room for optimal holographic effects, but ensure adequate ambient lighting to prevent tripping or accidents.

7. Supervision and Age Appropriateness

- **Adult Supervision:** Recommended for ages 12 and up. Adult supervision is advised during assembly and use, especially for younger users.
- **Educational Use:** We designed this tool to invent a novel way to interact with AI and also explore the wonderful emerging universe of 3D digital assets. We’ve had school teachers use the LemurKITs to cleverly demonstrate the innate biases baked into the AI models and also educate the students on the inherent risks pertaining to hallucination. Hence, we strongly mandate adult supervision when using our AI-powered apps.

8. App and Software Warnings

- **App Downloads:** We recommend only downloading apps from <https://hal51.ai/apps> to avoid malware or security risks. This is especially pertinent given that a lot of ‘holography 3D apps’ in our experience are basically surveillance malware ridden with ads.
- **Screen Mirroring Software:** Follow the instructions for any third-party software used to avoid compatibility issues or data breaches. This is extremely pertinent when you are screen mirroring from your laptop or desktop to the phone placed inside the LemurBox

Final Safety Recommendations : To ensure safe and enjoyable use of the LemurBox: Read the instruction manual thoroughly before assembly and use.

- Keep the device away from water, heat sources, and direct sunlight.
- Regularly inspect components for wear and tear, especially the acrylic screen and LED lights.
- **Projection Chamber:** Make sure that you take care when you place your smartphone or tablet into the projection chamber. We have provided a smaller-model holder frame that needs to be placed inside the projection chamber as shown below for smartphones that are small as shown in the image below. Placing a non-compatible smartphone whose screen-size dimensions are smaller than the projection slit may end up in the smartphone slipping through the slit and scratching or even shattering the display screen!

