



User Instruction for Polin Space Habitat Designer

1. **Launch the App:**
 - Run the Python script to open the main window of the POLIN Space Habitat Designer.
2. **Use the Design Wizard (optional):**
 - From the main window, click "Open Wizard" to use a guided setup.
 - Follow four steps:
 1. Enter design name, habitat type, launch system, destination, crew size, and mission duration.
 2. Configure habitat shape and dimensions with a preview.
 3. Review NASA data for your destination and save the design as JSON.
 4. Run a test to check volume, power, and thermal stability.
 - Click "Finish" to apply settings and proceed to the location selector.
3. **Select a Location:**
 - On the startup screen, click "Make Your Own Home in Space" to go to the location selector.
 - Choose a destination: Outer Space, Moon, or Mars by clicking the corresponding button with animated GIFs.
4. **Explore NASA Data:**
 - View the NASA image for your selected location (e.g., Mars rover photos or APOD for Outer Space).
 - Click "Space Weather" to see recent solar flares and CMEs from NASA's DONKI API.
 - For Outer Space, click "Generate New Image" to fetch a different APOD image.
 - Navigate to other locations using the "Go to" buttons.
5. **Design Your Habitat:**
 - Click "Design Habitat" to open the Habitat Designer window.
 - Configure Habitat (left panel):
 1. Select a shape (Cylindrical, Spherical, Dome, Modular).
 2. Adjust dimensions (length, diameter, height), crew size, and mission duration using sliders.

3. Monitor real-time stats like volume, O₂/CO₂ levels, and utilization percentage.
- **Add Modules (right panel):**
 1. Select modules (e.g., Life Support, Crew Quarters) from the library and click "+" to add them.
 - **Layout Modules (center canvas):**
 1. Drag modules to position them within the habitat outline.
 2. Double-click a module to edit its shape (cube, sphere, etc.) and parameters.
 3. Right-click a module to delete it.
 4. Enable "Snap to Grid" for precise placement.
 - **Validate Design:**
 1. Click "Validate Design" to check for issues (e.g., missing critical systems, insufficient volume).
 - **Save/Load Design:**
 1. Export your design as JSON or PDF using the "Export JSON" or "Export PDF" buttons.
 2. Import a saved design using the "Import Design" button.
 3. Clear all modules with the "Clear All" button.
- 6. Tips:**
- Ensure critical systems (Life Support, Power Systems, etc.) are included.
 - Maintain volume per crew > 10 m³ (target 20+ m³) and sufficient Crew Quarters.
 - Monitor O₂/CO₂ balance to avoid deficits/excess.
 - Save frequently to avoid losing your design.

Enjoy designing your space habitat!