



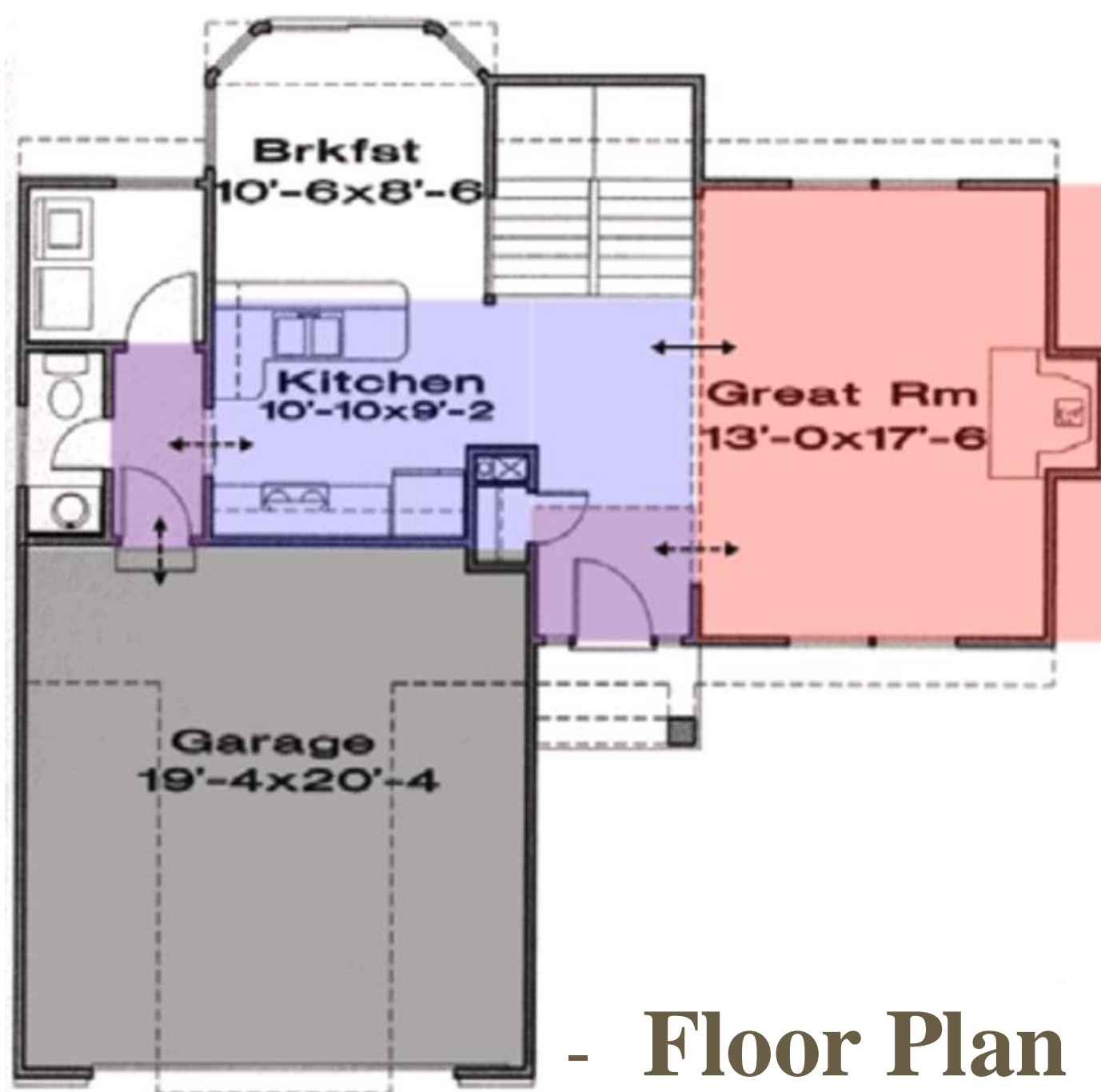
Architectural Co-Pilot

Democratizing Architectural Design with AI

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Introduction

The Architectural Co-Pilot is an AI-powered tool designed to simplify architectural and interior design processes. It empowers both professionals and non-professionals to quickly generate layouts and decoration designs.



Goals & Core Features

Goals:

- Improve architectural design efficiency.
- Provide an easy-to-use tool for users without prior design experience.

Core Features:

- **File Handling:** Supports STL, DXF, JPG, and PNG formats with conversion.
- **Basic Room Layout:** Generate and edit layouts based on room types (e.g., living room, bedroom).
- **Room Decoration:** Suggest furniture arrangements and color palettes.
- **Image Generation:** Create AI-generated rooms or room objects. Edit any generated images or user uploaded rooms.

Methods & Architecture

- Developed using Python, MMDetection API, OpenCV, ChatGPT API, rem.bg, and other tools.
- Integrated a user-friendly interface with database support for easy use.

Results & Demonstrations

Procedure

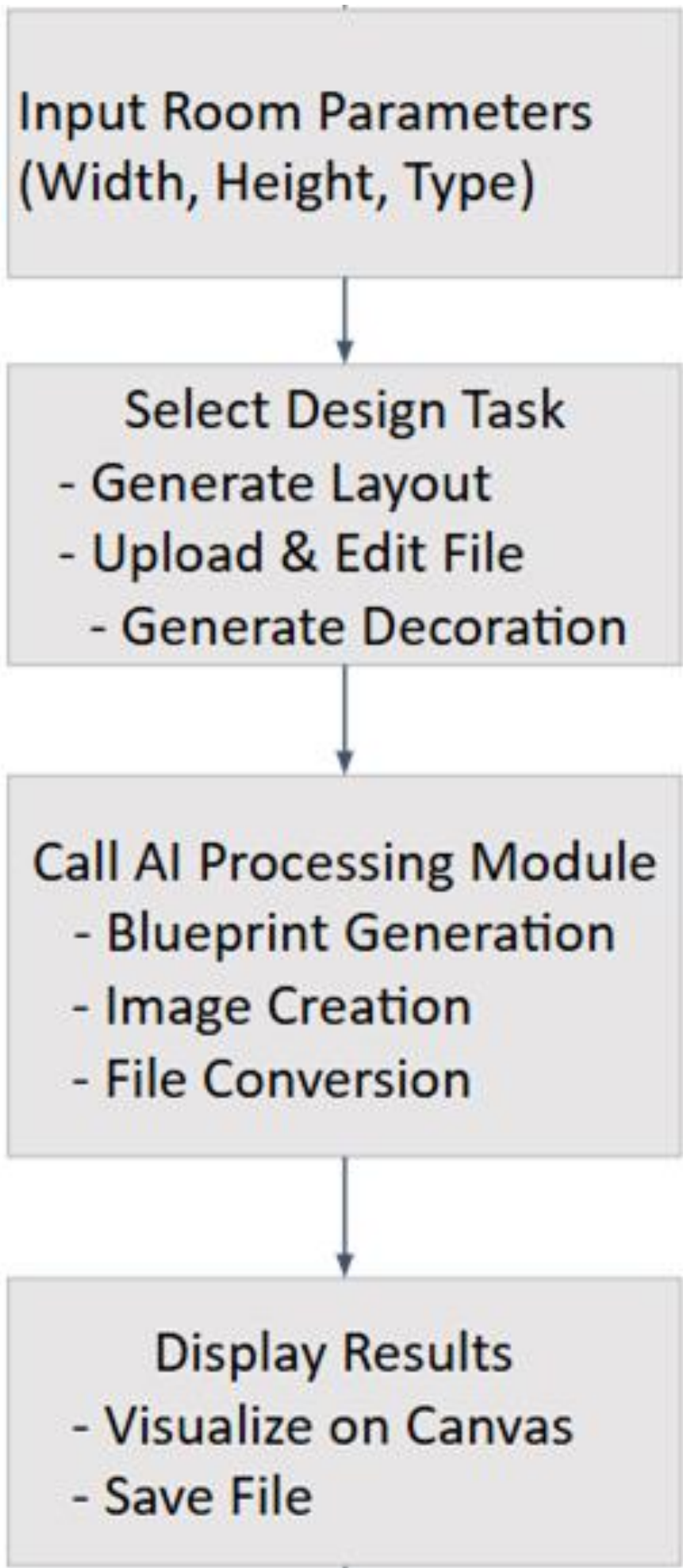
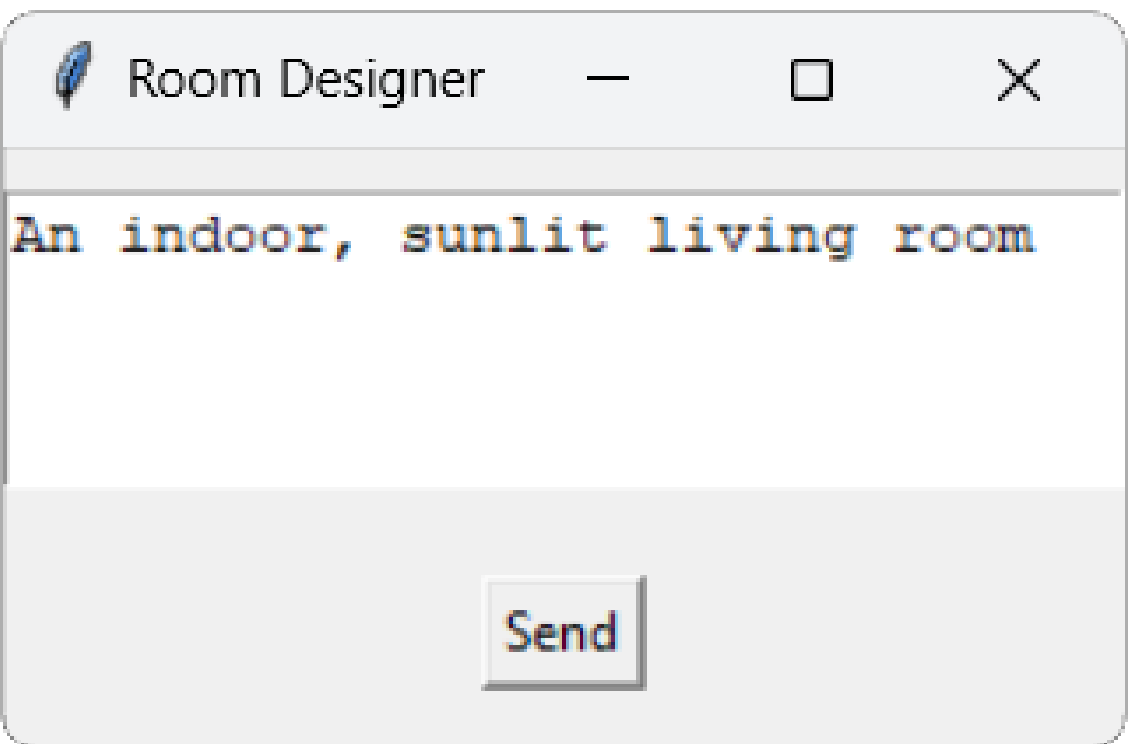


Image Generation:

- Generate blueprints of room layouts.
- AI-generated interior decoration images.

Room Designer UI



Blueprint UI

Room Width (in feet):
15

Room Height (in feet):
14

Select Room Type:
Living Room

Generate Blueprint

Directly create and edit room images through prompting:



Societal Impact

- **Accessibility:** Enables affordable, high-quality design for a broader audience.
- **Sustainability:** Reduces resource waste through precise virtual planning.
- **Equity:** Empowers underrepresented communities with accessible tools.

Future Improvements

- Support for multi level designs
- Improve connection between blueprint and room design layouts
- Automate room design process for multiple room features.
- Include suggestions for materials, colors, dimensions, etc.
- Streamline code for quicker generations.

Generated Blueprint

