The **Advanced AI-Driven Architectural Design System for Dynamic Floor Plan Generation** is an innovative solution that leverages AI technologies, including Conditional Generative Adversarial Networks (CGANs) and Convolutional Neural Networks (CNNs), to create professional, customizable residential ground floor plans based on user requirements. Users input details such as total area, number of bedrooms, bathrooms, kitchens, lounges, garages, and lawn preferences, and the system generates optimized, color-coded floor plans in real-time. Designed for 5 Marla, 10 Marla, and 20 Marla plots, the plans adhere to standard dimensions and are exportable in formats like DXF, PNG, and SVG, enabling seamless integration with CAD tools and easy sharing. The system focuses exclusively on residential ground floor layouts for now, ensuring accessibility for both professionals and non-experts.

we have work on its dataset and data pre-processing.

Data essential for model selection and training

Color Scheme for Floor Plans  
The floor plans are color-coded based on different room types. Below is the RGB mapping for each room:  
Sr.  
Room Type  
Color Name  
RGB Value

Bedroom  
Red  
RGB(255, 0, 0)

Bathroom  
Blue  
RGB(0, 0, 255)

Kitchen  
Orange  
RGB(255, 165, 0)

Drawing Room  
Green  
RGB(0, 128, 0)

Garage  
Brown  
RGB(165, 42, 42)

Lounge/Sitting Area  
Yellow  
RGB(255, 255, 0)

Backyard  
Lime Green  
RGB(50, 205, 50)

Stairs  
Teal  
RGB(0, 128, 128)

Storage Room/Store  
Purple  
RGB(128, 0, 128)

Open Space  
Cyan  
RGB(0, 255, 255)

Prayer Room  
Crimson  
RGB(127, 127, 127)

Staircase  
Violet  
RGB(153, 51, 255)

Lobby  
Magenta  
RGB(255, 0, 255)

Lawn  
Turquoise  
RGB(64, 224, 208)

Dining  
Pink  
RGB(225, 192, 203)

Servant Quarters  
Indigo  
RGB(75, 0, 130)

Passage  
Olive Green  
RGB(128, 128, 0)

Laundry  
Lavender  
RGB(230, 230, 250)

Dressing Area  
Coral  
RGB(255, 127, 80)

Side Garden  
Gold  
RGB(255, 215, 0)

Library  
Amber  
RGB(255, 191, 0)

Walls  
Black  
RGB(0, 0, 0)

Door:  
Mahogany  
RGB(128, 0, 0)

Floor Plan Dimensions  
The dimensions for each format are as follows:  
Plot Size  
Dimensions (Feet)  
Size (in)  
Resolution (px)  
DPI  
Aspect Ratio (Width:Height)  
Bit Depth  
5 Marla  
25' x 45'  
6.338 x 11.338  
608 x 1088  
96  
0.559  
24  
10 Marla  
35' x 65'  
8.833 x 16.344  
849 x 1570  
96  
0.541  
24  
20 Marla  
50' x 90'  
12.583 x 22.594  
1209 x 2170  
96  
0.557  
24

For ground floor (GF) plans only, color coding is used according to the scheme above. The system will generate floor plans based on user input and provide the option to export the plans in various formats, including DXF.  
System Output  
The end output of the system will generate floor plans based on user input, with the option to export them in multiple formats:  
DXF Format: For integration with CAD tools like AutoCAD.  
Additional Formats: Plans will be available in formats such as SVG and PNG.

. Extract Information from File Name  
Since we follow this naming convention:  
plaintext  
CopyEdit  
[PlotType]*[FloorLevel]*[PlanType]*[FP Sr. #]*[Version].[Extension]

Example File Name:  
5Marla\_GF\_FP\_001\_V01.png

From this, we can extract:  
Metadata Field  
Extracted From  
Example Value  
PlotSize  
File Name  
"5Marla"  
FloorLevel  
File Name  
"GF"  
PlanType  
File Name  
"FP"  
FP\_Number  
File Name  
"001"  
Version  
File Name  
"V01"

before proceeding please organize all information i provided and understand it.

let me explain images are:  
2. Directory Setup  
Ensure your dataset is organized according to the structure we discussed:

dataset/  
├── 5\_marla/  
│ └── \*.png  
├── 10\_marla/  
│ └── \*.png  
└── 20\_marla/  
└── \*.png

DPI = 96

Aspect Ratio = average of all floor plans = 0.552

Aspect ratio = width(px)/height(px)

Pixel to Area conversion:

Area per pixel = Total area/Total no. of pixels

Normal image dimensions for models are 512 x 512, but in our case FP are not in square so we need to keep in mind aspect ratio and resize all FP into one dimension for efficient model training.