We Claim:

1. A system for generating and visualizing an interior design pertaining to a floor plan in a three-dimensional representation, the system comprising:

a non-transitory storage device having embodied therein one or more routines operable to generate the three-dimensional representation of the interior design pertaining to the floor plan; and

one or more processors coupled to the non-transitory storage device and operable to execute the one or more routines, wherein the one or more routines include:

a two-dimensional image receive module, which when executed by the one or more processors, receives a two-dimensional input image pertaining to the floor plan, wherein the floor plan comprises at least one defined space;

a shape determination module, which when executed by the one or more processors, determines a bounded region of the at least one defined space by performing region expansion based on a Fast Library for Approximate Nearest Neighbors (FLANN) based range search emanating from a seed point pertaining to the at least one defined space, and determines a shape of the at least one defined space by filling a plurality of pixels of the bounded region with a reference pixel value and performing geometric extraction of the bounded region based on contour detection;

an object position determination module, which when executed by the one or more processors, computes one or more parameters of the at least one defined space and determines a position of one or more objects in the at least one defined space based on the one or more parameters and an annotation of the at least one defined space, wherein the position of the one or more objects is determined based on a set of pre-determined design assumptions obtained using neural networks;

an object placement module, which when executed by the one or more processors, places the one or more objects from a pre-built library according to the determined position of the one or more objects in the at least one defined space, wherein the placement of the one or more objects is

based on developing Gaussian normal distributions based on any or a combination of dimensions of the one or more objects and dimensions of the at least one defined space; and

a three-dimensional representation generation module, which when executed by the one or more processors, generates a three-dimensional representation of the interior design pertaining to the floor plan based on placement of the one or more objects in the at least one defined space.

2. The system of claim 1, wherein the two-dimensional image receive module receives any or a combination of the annotation and the seed point pertaining to the at least one defined space.

3. The system of claim 1, wherein the shape determination module processes the two-dimensional input image to obtain a binary image, and wherein determination of the bounded region is performed based on the binary image.

4. The system of claim 3, wherein in case the bounded region is not determined by performing determination of the bounded region based on the two-dimensional input image, the shape determination module performs said determination based on the binary image.

5. The system of claim 1, wherein the shape determination module fixes convexity defects of the at least one defined space by computing convex hulls.

6. The system of claim 1, wherein the one or more parameters include any or a combination of size of the at least one defined space, lengths of edges of the at least one defined space, location of the at least one defined shape in the floor plan, position of connectives in the at least one defined space, and cardinal directions.

7. The system of claim 1, wherein the object position determination module fetches the set of pre-determined design assumptions from a design engine.

8. The system of claim 1, further comprising an object optimization module to perform optimization of the one or more attributes of the one or more objects, wherein the one or more attributes comprise any or a combination of geometric attributes, optical attributes and structural attributes of the one or more objects.

9. The system of claim 1, further comprising an interactive visualization and editor module to allow a user to modify the generated three-dimensional representation of the interior design.

10. A method comprising the steps of:

receiving, by one or more processors, a two-dimensional input image pertaining to a floor plan, wherein the floor plan comprises at least one defined space;

determining, by the one or more processors, a bounded region of the at least one defined space by performing region expansion based on Fast Library for Approximate Nearest Neighbors (FLANN) based range search emanating from a seed point pertaining to the at least one defined space;

determining, by the one or more processors, a shape of the at least one defined space by filling a plurality of pixels of the bounded region with a reference pixel value and performing geometric extraction of the bounded region based on contour detection;

computing, by the one or more processors, one or more parameters of the at least one defined space and determining a position of one or more objects in the at least one defined space based on the one or more parameters and an annotation of the at least one defined space, wherein the position of the one or more objects is determined based on a set of pre-determined design assumptions obtained using neural networks;

placing, by the one or more processors, the one or more objects from a pre-built library according to the determined position of the one or more objects in the at least one defined space, wherein the placement of the one or more objects is based on developing Gaussian normal distributions based on any or a combination of dimensions of the one or more objects and dimensions of the at least one defined space; and

generating, by the one or more processors, a three-dimensional representation of an interior design pertaining to the floor plan based on placement of the one or more objects in the at least one defined space.