Motivation
- Provide automatic lookup to retrieve similar past architectural projects to aid architects.
- Help property buyers to select floor plans with more specificity in terms of both room décor and layout.

Contribution
- Room segmentation and adjacent room detection algorithm to represent layouts as an undirected graph.
- Graph spectral embedding feature to uniquely represent floor plans for efficient matching.
- Two stage matching technique comprising both room layout matching and room décor matching.
- Provide automatic lookup to retrieve similar past architectural projects to aid architects.
- Help property buyers to select floor plans with more specificity in terms of both room décor and layout.

Framework Diagram

Stage 3: Room Layout Matching

Stage 4: Room Décor Matching

Related Work
- Symbol spotting in graphical documents: Dutta et al. 2011, 2013
- Sketch-based retrieval of architectural floor plans: Weber et al. 2013
- Room detection in architectural floor plans: Ahmed et al. 2012

Stage 1: Segmentation
I. Closing gaps at door locations.
II. Floor plan boundary extraction.
III. Dilation + erosion with unit radius structuring element.

Stage 2: Room Adjacency Detection
I. Thresholding wall width and determining two-way adjacency in rooms.
II. Creating adjacency matrix and region adjacency graph.

Conclusions and Future Scope:
- An inclusive framework considering structural and semantic similarity.
- A novel room décor matching algorithm for specificity while retrieval.
- Spectral embedding approach to represent layout graphs.
- Sketch-based mode of query retrieval forms a future scope.