**Matching strategy v0.0**

1. Set the radius for searching target building.
2. Create a circular buffer around the camera point.
3. Clip the buffer to a fan based on heading and field of view. The fan indicates the sight of camera.
4. Filter the buildings partially or totally intersects with the fan as candidate buildings.
5. Generate a centre line of sight.
6. Find the first building the line of sight hit, export as target building of the image.

**Note on v0.0:**

* **Hypothesis:** This version is based on hypothesis that the image has small field of view and contains only one building. Also the centre of the image should fall on this building to allow proper detection.
* **Limitation:** not suitable for multi-building images, threshold needed
* **Optimisation plan:**
  + Gradient search for distance threshold
  + Generate different line of sight based on image segmentation after computer vision process
* **Others:** DON’T change the fan intersect part to just include the hit buildings, this is necessary for further optimization dealing with the no-centre-building images.

Opti-Notes:

* Gradient search
  + Independent function for intersect building – Done
  + Outer function for generating grading schema – TODO
* Random line of sight
  + Structure of function – Done
  + Restriction on FOV -Done
  + Take the cen\_ang parameter into use - TODO

Door Location(central) – repetition fixed

* Small FOV – assume that repetition only would occur in adjacent images
  + Set minimum tolerant distance
  + Check if image is adjacent to last one
  + If yes, calculate distance matrix with last image input
  + If distance between two doors is less than minimum tolerance, update the location using average coordinate
  + Return final door detection list