**Ravi**

Problems with traditional methods of 3D reconstruction (we want to scale)

* Most methods encourage using many images for the reconstruction (eg. from a flickr database) so having to calibrate all images is tedious
* Some methods require user input to match the object to reconstruct across the images (we want to minimize user input)

Intrinsic Parameters- focal length, pixel size points, principal points

Depend only on camera characteristics

Extrinsic Parameters- rotation matrix and translation vector of camera

Depend on the position/orientation of the camera.

Zhang’s method

* Some other methods are Photogrammetric- observing a calibration object whose geometry in 3D space is known with very good precision (requires expensive apparatus and elaborate setup)
* Self-calibration- by moving a camera in a static scene, the rigidity of the scene provides several constraints on the cameras’ internal parameters so correspondences between three images are sufficient to recover the parameters (this is not as guaranteed/mature).

Harris Corner Detection

* For each pixel, it creates a patch around that pixel and compares it to neighboring patches at different orientations (all directions considered).
* It computes the sum of squared differences between each patch and this detects edges/corners (if on edge, patches will look different perpendicular to edge but same parallel to edge while on corner, all directions will look very different).

**Frank**

3d reconstruction – normals of the plane are perpendicular to each other

Extract extrinsic parameters

* There are 4 potential rotation/translation pairs for the second image and we needed to pick the resulting pair which corresponds to the image being in front of the two cameras.