Recreating 3D scenery from just photographs and Photogrammetry

with Andrew Lam

Abstract: In surveying, engineering and meteorology, information about 3D objects and their environment are often recorded as photographs. In order to extract three-dimensional measurements and recreate the scenery from two-dimensional data we need to piece together various photographs taken at different angles and orientations. Photogrammetry is a technique utilizing the theories of optics, projective geometry and some linear algebra to reconstruct the 3D object and environment. In this project we will explore the mathematics behind photogrammetry and implement a test case with existing software package in trying to build a 3D model of an object from photos captured with a mobile phone.

References:

- Close Range Photogrammetry: Principles, techniques and applications by Thomas Luhmann, Stuart Robson, Stephe Kyle and Ian Harley
- YouTube Channel
- Lecture Notes 1
- Lecture Notes 2