Syllabus and Schedule of CS152A

September 27, 2020

- Review (Lec 1 & 2 & 3): Basic linear algebra, Least square, Numerical optimization;

- Image formation (Lec 4 & 5): Geometric primitive and transformations, Photo-metric image formation (Ch 2 of SZ);

- Model fitting (Lec 6 & 7): Least square, PCA, RANSAC (Sec 5.2.3, 8.1.4, A.2 of SZ);

- Image processing (Lec 8): Filters, Frequency Analysis (Sec 3.2 and 3.4 of SZ);

- Basic Deep Learning (Lec 9 & 10): Multi-layer Perceptron, CNN, Back-propagation, Corner detection (Ch 5);

- Mid-term (Lec 11);

- Recognition (Lec 12 & 13 & 14): Image classification, Loss function, Bias/variance tradeoff, Adversarial examples, AI ethnics (Ch 6 of SZ);

- Multiview Geometry (Lec 15 & 16 & 17): Camera model, PnP pose estimation, Fundamental matrix, Panorama (Ch 8 of SZ);

- Motion estimation (Lec 18 & 19): Optical flow, Background removal (Sec 9.4 of SZ).

- Applications (Lec 20): Autonomous driving, Robotics, Medical image processing

Remark: SZ can be downloaded from `http://szeliski.org/Book/`