

Syllabus and Schedule of CS152A

September 27, 2020

- Review (Lec 1 & 2 & 3): Basic linear algebra, Least square, Numerical optimization;
- Image formation (Lec 4): Geometric primitive and transformations, Photometric image formation (Ch 2 of SZ);
- Model fitting (Lec 5 & 6): Least square, PCA, RANSAC (Sec 5.2.3, 8.1.4, A.2 of SZ);
- Image processing (Lec 7): Filters, Frequency Analysis (Sec 3.2 and 3.4 of SZ);
- Basic Deep Learning (Lec 8 & 9): Multi-layer Perceptron, CNN, Back-propagation, Corner detection (Ch 5);
- Mid-term (Lec 10);
- Recognition (Lec 11 & 12 & 13): Image classification, Loss function, Bias/variance tradeoff, Adversarial examples, AI ethnics (Ch 6 of SZ);
- Multiview Geometry (Lec 14 & 15 & 16): Camera model, PnP pose estimation, Fundamental matrix, Panorama (Ch 8 of SZ);
- Motion estimation (Lec 17 & 18): Optical flow, Background removal (Sec 9.4 of SZ).
- Applications (Lec 19): Autonomous driving, Robotics, Medical image processing

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