Syllabus for Computer Vision

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1 Classical Methods in Computer Vision

1.1 Linear and Non-Linear Filters: Convolution, Bluring, Gradient, Erosion and Dilation.

1.2 Interpolation, Affine Transformations. Cumulative Sum and Guided Filtering, Guided Upsampling.

1.3 Local Features: Edge Detectors, Neighborhood Description.

1.4 Segmentation by Clustering and Graphs: Watershed Algorithm, Graph-Based Aglomerative Clustering, Graph Cuts, Spectral Methods.

1.5 Textures: Texture synthesis, hole filling.

2 Deep Learning for Computer Vision

2.1 Introduction: Problems. Image Classification and Semantic Segmentation.

2.2 Texture Synthesis, Style Transfer, Image Analogies.

2.3 Object Localization, Detection.

2.4 Segmentation Revisited: Instance Segmentation.

2.5 Generative Models.