

EECS 432 ADVANCED COMPUTER VISION – Winter 2017

Instructor: Ying Wu (yingwu@eecs.northwestern.edu)
 Time & Place: Tu/Th 11:00-12:20pm Tech L170
 Course Web: <http://www.eecs.northwestern.edu/~yingwu/teaching/EECS432>

“Motion, Geometry and Learning towards Visual Perception”

	Week	Date	Lectures and Discussions	Chapter	Papers	MP
I.	W-1	1/03(Tu) 1/05(Th)	Introduction Camera Model and Calibration	1,2,3 1,2,3	[Zhang00]	
	W-2	1/10(Tu) 1/12(Th)	Radiometry, BRDF, Shape from Shading Segmentation and Grouping	4,5 14,15,16	[Shi98]	
II.	W-3	1/17(Tu) 1/19(Th)	Optical Flow and Motion Analysis (I) Optical Flow and Motion Analysis (II)		[Caspi01]	#1
	W-4	1/24(Tu) 1/26(Th)	Optical Flow and Motion Analysis (III) Visual Tracking (I): basic and example	17	[Isard98]	#2
	W-5	1/31(Tu) 2/02(Th)	Visual Tracking (II): advanced Complex Motion Analysis and Markov Networks			
	W-6	2/07(Tu) 2/09(Th)	Stereo (I) Stereo (II)	10 11	[Seitz01] [Szeliski98]	
	W-7	2/14(Tu) 2/16(Th)	Structure From Motion 3D Reconstruction & Image-based Rendering		[Tomasi92] [Seitz96]	
	W-8	2/21(Tu) 2/23(Th)	Face Detection Object Recognition (PCA,MDA,ICA,CNN)	22	[Turk91]	#3
III.	W-9	2/28(Tu) 3/02(Th)	Image Tagging HMM, Bayesian Networks, Action Recognition		[Rabiner89]	
	W-10	3/07(Tu) 3/09(Th)	Project Presentations (I) Project Presentations (II)			

- [Zhang00]: Z. Zhang, “A Flexible New Technique For Camera Calibration”, IEEE T-PAMI, 2000.
- [Zhu98]: S. Zhu, Y. Wu and D. Mumford, “Filters, Random Fields and Maximum Entropy (FRAME): Towards a Unified Theory for Texture Modeling”, IJCV, 1998.
- [Shi97]: J. Shi and J. Malik, “Normalized Cuts and Image Segmentation”, CVPR’97.
- [Caspi01]: Y. Caspi and M. Irani, “Alignment of Non-Overlapping Sequences”, ICCV’01.
- [Isard96]: M. Isard and A. Blake, “Contour tracking by stochastic propagation of conditional density”, ECCV’96.
- [Bregler98]: C. Bregler and J. Malik, “Tracking People with Twists and Exponential Maps”, CVPR’98.
- [Cootes98]: T. Cootes, G. Edwards, C. Taylor. “Active Appearance Models”, ECCV’98.
- [Seitz01]: S. Seitz, “The Shape of all Stereo Images”, ICCV’01.
- [Szeliski98]: R. Szeliski and P. Golland. “Stereo matching with transparency and matting”, IJCV’99.
- [Tomasi92]: C. Tomasi and T. Kanade, “Shape and Motion From Image Streams Under Orthography – A Factorized Method”, IJCV’92.
- [Brand01]: M. Brand, “Morphable 3D Models from Video”, CVPR’01.
- [Seitz96]: S. Seitz and C. R. Dyer, “View Morphing”, SIGGRAPH’96.
- [Turk91]: M. Turk and A. Pentland, “Face Recognition Using Eigenfaces”, CVPR’91.
- [Sung98]: K. Sung, T. Poggio. “Example-Based Learning for View-Based Human Face Detection,” IEEE T-PAMI, 1998.
- [Rabiner89]: L. Rabiner, “A Tutorial on Hidden Markov Models and Selected Applications in Speech Recognition”, Proc. IEEE, 1989.