CDI/DIC / Spring 2015 / Tentative schedule

February						
M	T	W	T	F	S	S
						1
2	3	4	**5**	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

March						
M	T	W	T	F	S	S
						1
2	3	4	**5**	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23/30	24/31	25	26	27	28	29

April						
M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

May						
M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

June						
M	T	W	T	F	S	S
1	2	3	4	5	6	7

Approximate distribution of topics:

Information theory (17/2 to 05/3)

Elements of probability theory. Introduction to Shannon information theory: Sources of information and communication systems, uncertainty and entropy, limits of compression.

Lossless techniques (10/3 to 16/4)

Source coding. Huffman's algorithm. Arithmetic coding. Dictionary and context-based techniques. Transform coding. Cosine transform.

Lossy coding (21/4 to 26/5)

General ideas on lossy coding. Signal sampling. Haar compression. Daubechies compression. Special features of audio coding. Special features of image and video compression. Introduction to compressed sensing and other recent techniques.

Presentation of paper projects: 28/5 and 4/6.

On each hour, some theoretical ideas will be presented, together with examples, and followed by exercises, labs and problem discussions. Lab work is delivered before the end of each class. Each Tuesday, there will be an assignment to be handed in not later than midnight of next Sunday.