

**CSRC Short Course on Deep Learning and Applications**  
10-14 July, 2017, Conference Room II, Level 3, CSRC

**Program**

	Mon, 10/7	Tues, 11/7	Wed, 12/7	Thur, 13/7	Fri, 14/7
<b>8:30 -</b>	Registration				
<b>9:00 – 10:15</b>	Deep learning: introduction and overview	Hopfield model and prototype learning II (Zhou Haijun)	Convolutional networks II, why convolution works wonders, image processing, (Bengio Chap 9, Zeng Chen)	Boltzmann Machines II (Chap 20, Zhang Pan)	Deep Learning Symposium  Applications in image processing, materials structure characterization, screening of functional molecules, DNA sequence analysis etc.
<b>10:15 – 10:45</b>	tea break, discussions				
<b>10:45 – 12:00</b>	Hopfield model and prototype learning I (Zhou Haijun)	Deep forward networks II Bengio's book, Chap. 6, 赵永红)	Boltzmann Machines I, unsupervised learning (Chap 20, Zhang Pan)	Guest lecture: Autoencoders (Chap 14, Tang Qianyuan)	
<b>12:00 – 14:00</b>	lunch break				

<b>14:00</b> – <b>15:15</b>	Machine learning basics (Bengio's book, Chap. 5, 赵永红)	Convolutional networks I, theory, RG (Bengio Chap 9, Zeng Chen)	Recurrent neural network, memory, time-series analysis (Chap 10, Zeng Chen)	Limitations and latest developments in deep learning, residue network, memory module, GAN, insights on re-enforced learning etc. (Zeng Chen)	
<b>15:15</b> – <b>15:45</b>	tea break, discussions				
<b>15:45</b> – <b>17:00</b>	Deep forward networks I Bengio's book, Chap. 6, 赵永红)	Case studies with scikit-learn, scikit-image, TensorFlow, (赵永红)	Natural language processing (刘翔)	Group presentations	
<b>18:30</b> – <b>21:00</b>	Python, software installation, demonstration, group discussion, projects, image processing, natural language, distance between words (Haiguang Liu, Jin Yu, Luo Liang, TAs)				

参考书： Deep Learning by Ian Goodfellow, Yoshua Bengio and Aaron Courville, MIT Press (2016), <http://www.deeplearningbook.org/>