Syllabus

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1 Logistics

Class: CS 6301.502.18F Special Topics in CS – Convolutional Neural Networks
Link: https://coursebook.utdallas.edu/search/searchresults/cs6301.502.18f
Location: Mon and Wed from 5:30 – 6:45 pm in FN 2.102

Description: This course provides an introduction to convolutional neural networks (CNNs). The theory part of the course is motivated by the realization that many information extraction problems can be reduced to a classification or regression problem, neural networks are universal approximators and CNNs are an efficient neural network structure for multidimensional data. Network design and training methods are discussed along with software and hardware requirements for high performance CNN implementations. Theory and implementation are demonstrated and expanded on in the context of applications.

Outline:

Background	–	linear algebra, calculus and probability
Theory	–	machine learning and convolutional neural networks
Implementation	–	hardware and software
Application	–	vision, speech, language and games

2 Plan

29/33 valid class days, exact plan subject to change

01	Mon Aug 20	Introduction	
02	Wed Aug 22	Linear algebra	
03	Mon Aug 27	Calculus	
04	Wed Aug 29	Probability	**HW due**
05	**Mon Sep 03**	**Labor Day**	
06	Wed Sep 05	Machine learning	**HW due**
07	Mon Sep 10	Convolutional neural networks	
08	Wed Sep 12	Convolutional neural networks	**HW due**

09	Mon Sep 17	Convolutional neural networks	
10	Wed Sep 19	Convolutional neural networks	**HW due**
11	Mon Sep 24	Practical / review	
12	**Wed Sep 26**	**Theory test**	
13	Mon Oct 01	Hardware	
14	Wed Oct 03	Hardware	**HW due**
15	Mon Oct 08	Hardware	
16	Wed Oct 10	Software	**HW due**
17	Mon Oct 15	Software	
18	Wed Oct 17	Software	**HW due**
19	Mon Oct 22	Practical / review	
20	**Wed Oct 24**	**Implementation tool**	
21	Mon Oct 29	Vision	
22	Wed Oct 31	Vision	**HW due**
23	Mon Nov 05	Vision	
24	Wed Nov 07	Speech	**HW due**
25	Mon Nov 12	Speech	
26	Wed Nov 14	Language	**HW due**
27	**Mon Nov 19**	**Fall break**	
28	**Wed Nov 21**	**Fall break**	
29	Mon Nov 26	Games	
30	Wed Nov 28	Summary and next	**HW due**
31	**Mon Dec 03**	**Project (1/2)**	
32	**Wed Dec 05**	**Project (2/2)**	
33	**Mon Dec 10**	**Reading day**	

3 Grades

25%	Theory test
25%	Implementation tool
25%	Project
25%	Homework

4 Notable Dates

Mid term grades	Sat Oct 13	(undergrad classes only)
Final exams	Tue Dec 11 – Mon Dec 17	(none)
Final grades	Tue Dec 11 – Thu Dec 20	(all)