ECE 277/477 - Computer Audition
Fall 2019 - ECE Department - University of Rochester
(Cross listed as AME 277/477, CSC 264/464, TEE 477)

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Course Calender/Schedule (Subject to Change)

Week	Day	Date	Topic	Speaker	Required Reading	Extended Reading	Assigned	Due
1	Thu	Aug 29	Introduction	Zhiyao Duan	Lyon: Machine Hearing: An Emerging Field		Class Paper Review; Presentation of Research; Course Project; Peer Feedback; HW0 (Warm-up)	
2	Tue	Sep 3	Auditory Scene Analysis	Zhiyao Duan	Bregman: ASA Book Chapter 1	Wang & Brown: CASA Book Chapter 1	HW1	
2	Thu	Sep 5	Signal Processing Review	Zhiyao Duan	Mueller: Fundamentals of Music Processing Book Chapter 2			
3	Tue	Sep 10	Human Auditory Sensation	Zhiyao Duan	Yost: Hearing Book Chapter 11	Patterson: Auditory Images; Lyon et al: Sparse Auditory Representations		
3	Thu	Sep 12	Human Auditory Sensation	Zhiyao Duan	Yost: Hearing Book Chapter 13	Shamma: Encoding Sound Timbre in the Auditory System Wang & Shamma: Spectral Shape Analysis	HW2	HW1
4	Tue	Sep 17	Single Pitch Detection	Zhiyao Duan	Cheveigne: CASA Book Chapter 2.1-2.3	Cheveigne & Kawahara: YIN; Boersma: Praat		
4	Thu	Sep 19	Rhythm Analysis	Zhiyao Duan	Mueller: Fundamentals of Music Processing Book Chapter 6	Ellis: Beat Tracking by Dynamic Programming Klapuri et al: Meter Analysis;	HW3	HW2
5	Tue	Sep 24	Timbre Representation	Zhiyao Duan	Herrera-Boyer et al: Signal Processing Methods for Music Transcription Book Chapter 6	Childers et al.: The Cepstrum; Davis & Mermelstein: MFCC		
5	Thu	Sep 26	Timbre Representation	Mingqing & Yufei	Tzanetakis: Music Data Mining Book Chapter 2	Hermansky: PLP; Hermansky & Morgan: RASTA		Paper Review Batch 1
6	Tue	Oct 1	NMF Audio Modeling	Zhiyao Duan	Smaragdis & Brown: NMF Polyphonic Music Transcription	Lee & Seung: NMF	HW4	HW3
6	Thu	Oct 3	NMF Audio Modeling	Zhiyao Duan	Smaragdis et al.: PLCA	Virtanen: Monaural Sound Source Separation		
7	Tue	Oct 8	HMM Audio Modeling	Zhiyao Duan	Rabiner: HMM	Mysore: PhD Thesis Chapter 2		Project Proposal
7	Thu	Oct 10	How to write a paper? How to give a talk? How to make a poster?	Zhiyao Duan	Goodfellow et al.: Deep Learning Book Chapter 6	Lee & Slaney: Chord and Key; Sheh & Ellis: Chord Segmentation and Recognition		
8	Tue	Oct 15	**NO CLASS: Fall Break**					HW4
8	Thu	Oct 17	Deep Learning for Audio BP Deriviation	Zhiyao Duan	Goodfellow et al.: Deep Learning Book Chapter 9	Hinton et al.: DNN for Speech Recognition; DNN for Speech Separation; Huang et al: Singing Voice Separation by RNN	HW5	
9	Tue	Oct 22	Deep Learning for Audio CIRC Intro	TBD	Goodfellow et al.: Deep Learning Book Chapter 14	Schluter & Bock: Onset Detection by CNN; Hamel & Eck: Music Feature Learning with DBN;		Paper Review Batch 2
9	Thu	Oct 24	Deep Learning for Audio	Zhiyao Duan				
10	Tue	Oct 29	Multi-pitch Analysis	Zhiyao Duan	Cheveigne: CASA Book Chapter 2	Klapuri: Harmonicity and Spectral Smoothness Duan et al: Peak and Non-peak Region		

10	Thu	Oct 31	Multi-pitch Analysis	Zhiyao Duan	Duan et al: Multi-pitch Streaming	Poliner & Ellis: Discriminative Model; Sigtia et al.: Neural Network for Piano Transcription	HW5
11	Tue	Nov 5	Score-informed Source Separation	Zhiyao Duan	Dannenberg & Raphael: Alignment and Accompaniment; Ewert et al: SISS Overview	Ewert & Muller: Score-informed NMF; Duan et al: Soundprism	
11	Thu	Nov 7	Audiovisual Analysis of Music	TBD	Rivet et al.: Audiovisual Speech Source Separation	Dinesh et al.: Visually Informed MPA; Li et al.: Audio Visual Source Association	
12	Tue	Nov 12	Audio-Visual Scene Understanding	Zhiyao Duan	Arandjelovic & Zisserman: Objects that Sound; Owens & Efros: AV Scene Analysis	Arandjelovic & Zisserman: Look Listen and Learn; Zhao et al.: Sounds of Pixels	
12	Thu	Nov 14	Multi-channel Source Localization and Separation	Zhiyao Duan	Stern et al: CASA Book Chapter 5; Yilmaz & Rickard: DUET	Woodruff & Wang: Binaural Localization Reverberant Noisy	Paper Review Batch 3; Project Staus Update Meeting (Friday)
13	Tue	Nov 19	Acoustic Event Detection	Zhiyao Duan	Grzekzick et al.: Bag-of-Features Methods	Cakir et al.: Convolutional RNN; Jansen et al.: Large-scale AED from YouTube	
13	Thu	Nov 21					
14	Tue	Nov 26					
14	Thu	Nov 28	**NO CLASS: Happy Thanks Giving!**				
15	Tue	Dec 3					Project Report Draft
15	Thu	Dec 5					
16	Tue	Dec 10					
16	Thu	Dec 12	Project Poster Presentations	Students	TBD	Pizza & Soda provided	
16	Fri	Dec 13	**NO CLASS: Finals Week**				Project Report Final; Poster Final

Updated on August 29, 2019