TIGP Bioinformatics Program 2024 Spring Syllabus

Advanced Algorithms (C2)

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For the latest syllabus, please visit the BP website: https://idv.sinica.edu.tw/tigpbio/										
Place: Room 308, Institute of Statistical Science, Academia Sinica										
Time: Friday 14:00-17:00 Chair: Dr. Chien-Yu Chen (chienyuchen@ntu.edu.tw) Outline: This course is basically about data mining, machine learning and statistical modeling from data, and some										
other algorithms and applications.										
Resources: There are 8 topics given in the way of <u>Videos Preview</u> (about 2~3 hours) + <u>In-class discussions</u> (about 1~1.5										
nours). Please find the link (<u>https://bit.ly/41vGP3G</u>) that WILL provide the links of the following: (1) the videos to be watched BEFORE the class										
(2) the questions to be discussed IN the class(3) the homework to be completed AFTER the class										
References: 1. Learning from Data- A Short Course (Abu-Mostafa, Magdon-Ismail, Lin, 2012) 2. Learning Pattern Classification (Duda, Harg, and Stork, 2001) 3. An Introduction to Support Vector Machines and Other Kernel-based Learning Methods (Cristianini and Shawe-Taylor, 2000) 4. [DL in Life Science] https://mit6874.github.io/ 5. [ML for Genomics] https://www.classcentral.com/course/youtube-6-047-6-878-machine-learning-for-genomics-foil-2020_48203										
TA: Daniel Garcia-Ruiz Email: gard_ruiz@hotmail.com Office hours: Thursdays 12:00 ~14:00 pm Office location: https://meet.google.com/did-zxfu-iyf?pli=1 Crades: Midrem evam 50%										
For Non-RP student]										
For No	n-BP student to regi	ster/sit-in any BP course, it is required to gain cou	rse chair's permission:							
(1) Bas	sic Enrollment Inform	nation form <u>https://forms.gle/oK7vJzzrx9EvybbT9</u>	<u>9</u>							
(2) TIGP-BP Course Registration Consent Form										
 Deadline: the 4th week of each semester. Signature of the course chair should be collected before submission. Incomplete form will not be accepted. Course grade will NOT be given (even class enrollment is completed at school) if fail to follow the above procedures. 										
Week	Date	Topics/Brief Description	Lecturers							
1	2024/2/23	Data Classification	Dr. Li Su							
2	<u>2024/3/1</u> @Webex Only	Boolean and Bayesian networks	Dr. Horng-Shing Lu							
3	2024/3/8	Hidden Markov Models	Dr. Yu Tsao							
		Convolutional Neural Networks Recurrent								

1	2024/2/23	Data Classification	Dr. Li Su	Lectures	HW with a specified deadline April 12th	lisu@iis.sinica.edu.tw
2	<u>2024/3/1</u> @Webex Only	Boolean and Bayesian networks	Dr. Horng-Shing Lu	Online Lectures	HW with a specified deadline: April 12th	henryhslu@nycu.edu.tw
3	2024/3/8	Hidden Markov Models	Dr. Yu Tsao	Lectures	In-class exam on midterm exam date	yu.tsao@citi.sinica.edu.tw
4	2024/3/15@16:20 Webex Only	Convolutional Neural Networks, Recurrent Neural Networks (optional: Graph Neural Networks)	Dr. Che Lin	Preview videos + online discussions	HW with a specified deadline:April 12th	che.lin@gmail.com
5	<u>2024/3/22</u> <u>Webex Only</u>	[DL in Life Science] GWAS and Variants	Dr. Tzu-Pin Lu	Preview videos + online discussions	HW with a specified deadline: April 5th	tplu@ntu.edu.tw
6	2024/3/29	Single cell RNA-seq	Dr. Yao-Ming Chang	Preview videos + in-class discussions	HW with a specified deadline: April 19th (was April 12th)	petitming@ibms.sinica.edu.tw
7	2024/4/5	National Holiday & Review Week (no class)				
8	2024/4/12	Midterm Exam				
9	2024/4/19	Network Analysis	Dr. Hsuan-Cheng Huang	Lectures	HW with a specified deadline: May 10th	hsuancheng@nycu.edu.tw
10	2024/4/26	[DL in Life Science] Graph Analysis [DL in Life Science] Drug Discovery	Dr. Yueh-Hua Tu	Preview videos + in-class discussions	HW with a specified deadline: May 17th	a504082002@gmail.com
11	2024/5/3	[DL in Life Science] Protein Structure Prediction	Dr. Chien-Yu Chen	Preview videos + in-class discussions	HW with a specified deadline	chienyuchen@ntu.edu.tw
12	2024/5/8 (Wed) 14:00-17:00	Advanced Algorithms for Proteomics	Dr. Ching-Tai Chen	Preview videos + in-class discussions	HW with a specified deadline	ctchen@asia.edu.tw
13	<u>2024/5/17</u> <u>Webex Only</u>	Systems Biology and Biological Modeling of Gene Regulation	Dr. Yu-Chao Wang	Preview videos + online discussions	HW with a specified deadline: May 31st	yuchao@nycu.edu.tw
14	2024/5/24	Exploring modeling in enzyme kinetics and pharmacokinetics	Dr. An-Chi Wei	Preview videos + in-class discussions	HW with a specified deadline: June 7th	acwei86@ntu.edu.tw
15	2024/5/31	Review Week (no class)				
16	2024/6/7	Final Exam				

Lecture Style

Evaluation Method

Email