! This class has been made inactive. No posts will be allowed until an instructor reactivates the class.

note 304 views

Syllabus

This is where we will post all lecture notes, videos, reading material, and homework assignments.

It will be updated throughout the semester, adding lecture slides before each class, and videos shortly after class, so be sure to check it frequently.

The Lecture Video Catalog is available here.

Books for Suggested Readings:

- [Mitchell] - Machine Learning, Tom Mitchell
- [Bishop]- Pattern Recognition and Machine Learning, Christopher Bishop

Date	Topic	Video	Slides	Required Readings	Homework
Jan 20	Introduction to Machine Learning, Decision Trees, Entropy, Information Gain	Lecture 1	Lecture 1	1. Machine Learning: Trends, perspectives, and prospects (optional) review materials for HW1 (optional) [Mitchell] Ch. 3 Decision Trees	HW1 due Jan 20
Jan 25	Decision Trees, Overfitting, Probabilistic Learning	Lecture 2	Lecture 2	1. Probability tutorial [Moore] 2. Estimating Probabilities Section 1	
Jan 27	Estimating Probabilities: MLE, MAP	Lecture 3	Lecture 3	Estimating Probabilities Section 2	HW2 due Feb 8
Feb 1	Naive Bayes Classifier, Conditional independence	Lecture 4	Lecture 4	Naive Bayes and Logistic Regression	
Feb 3	Gaussian Naive Bayes Classifier	Lecture 5	Lecture 5	Naive Bayes and Logistic Regression	
Feb 8	Logistic Regression, Generative/Discriminative classifiers	Lecture 6	Lecture 6	Naive Bayes and Logistic Regression	
Feb 10	Graphical models: representation	Lecture 7	Lecture 7	recommended: Bishop Ch. 8 through 8.2	HW3 out Feb 11, due Feb 18
Feb 15	Graphical models: inference	Lecture 8	Lecture 8	recommended: Bishop Ch. 8	
Feb 17	Graphical models: learning from unlabeled data and EM	Lecture 9	Lecture 9	recommended: Bishop Ch. 9-9.2 also helpful: J. Bilmes tutorial	
Feb 22	Clustering: Mixture of Gaussians Graphical Model	Lecture 10	Lecture 10 Code	recommended: Bishop Ch. 9.2-9.4, Tree Augmented Naive Bayes optional (variational inference): Bishop 10.2-10.4	
Feb 24	Linear regression, gradient descent training	Lecture 11	Lecture 11	Bishop Ch. 31., 3.2	HW4 out Feb 25, due Mar 3
Feb 29	Neural networks: backpropagation, learning representations	Lecture 12	Lecture 12	Mitchell Ch. 4, Bishop Ch. 5	
Mar 2	Neural networks: deep networks	Lecture 13	Lecture 13	Mitchell Ch. 4, Bishop Ch. 5	project proposals due Mar 4
Mar 14	Neural networks and Midterm Review	Lecture 14	Lecture 14	Mitchell Ch. 4, Bishop Ch. 5	
Mar 16	MIDTERM EXAM IN CLASS, CLOSED BOOK, ONE PAGE OF NOTES ALLOWED				
Mar 21	PAC learning 1	Lecture 15	Lecture 15	Mitchell Ch. 7, Prof. Balcan notes on generalization guarantees	
Mar 23	PAC learning 2, VC dimension, Splitting coefficient	Lecture 16	Lecture 16	Mitchell Ch. 7, Prof. Balcan notes on generalization guarantees	
Mar 28	PAC learning 3, Rademacher Complexity, Mistake bounds	Lecture 17	Lecture 17	Mitchell Ch. 7, Rob Shapire/Josh Chen Rademacher Complexity	
Mar 30	Ensemble methods, Boosting	Lecture 18	Lecture 18	Rob Shapire Boosting	
Apr 4	Kernel Regression	Lecture 19	Lecture 19	Bishop Ch. 6.1, (optional Bishop 6.2,6.3)	

Apr 6	Support Vector Machines	Lecture 20	Lecture 20	Bishop Ch. 7 through 7.1.2.	midway project reports due
Apr 11	Representation learning: PCA, ICA, CCA; Semi-Supervised	Lecture 21	Lecture 21		
Apr 13	Representation learning: Case studies, Matrix factoriz., LDA	Lecture 22	Lecture 22		
Apr 18	Estimating accuracy from unlabeled data	Lecture 23	Lecture 23		
Apr 20	Never Ending Learning	Lecture 24	Lecture 24		
Apr 25	Reinforcement learning	Lecture 25	Lecture 25		
Apr 27	Wrap up	Lecture 26	N/A	Mitchell: Notes on some key concepts	

#pin

logistics

Updated 2 years ago by Brynn Edmunds and 3 others

followup discussions *for lingering questions and comments*

Resolved Unresolved

Yining Zhao (anon. to classmates) 2 years ago
Hi, it seems that you forgot to include the link.

Anthony Platanios 2 years ago Hi Yining,

This is just a template for now. We are working together to fill this table ASAP.

Cheers,
Anthony

Chia Dai (anon. to classmates) 2 years ago just curious as for when the website would be up?

Abhinav Arora 2 years ago We have decided to use Piazza for everything instead of the website.

Resolved Unresolved

Zihan Zhou 2 years ago
may i ask where can we find TA office hours?

Abhinav Arora 2 years ago You can find the TA office hours on the Resources section of Piazza. Go to Resources -> Staff.

Resolved Unresolved

Reuben Aronson 2 years ago
How do we login to mediasite to see the video lectures? My cmu account doesn't seem to be working. Thanks!

Reuben Aronson 2 years ago Hmm, andrew id seems to have worked this time. Never mind...

Resolved Unresolved

Hannah Kim 2 years ago
Is this where the hw is going to be released?

Resolved Unresolved

Ian Welland (anon. to classmates) 2 years ago
what's the grade breakdown again? so far the homework is too boring/useless to be worth my time, I want to see if I can just slither past on exam scores/project scores

Reuben Aronson 2 years ago You do realize you're not anonymous to the instructors, right?

Ian Welland (anon. to classmates) 2 years ago i do indeed realize this ;)

Hannah Kim (anon. to classmates) 2 years ago Lecture Note 1, page 4.
Be a good time manager.

Rohan Kohli (anon. to classmates) 2 years ago Well, I'm quite new to Machine Learning, and from everything I've read about the subject, everything in this homework was extremely relevant - most of it is fundamental to understanding the subject well. So saying it was 'useless' is most certainly incorrect. If you already know enough about the subject then perhaps you should consider a more advanced course rather than an introductory course on the subject.

And to say it was 'boring' - that's obviously just your personal opinion. I thought it was extremely interesting. I can't speak for everyone, but for me and all other students I know, the homework was quite challenging - in a good way, in that I had to sit with some of the problems for several hours before figuring them out.

Shushman Choudhury 2 years ago The fact that you could have just asked the first part of your question without the unsubstantiated, irrelevant and inane addendum just shows that the perceived issue you are having is not with the course, it is with your own outlook. Also, nobody whose time is truly valuable and worthwhile makes such a post to begin with, so that's there.

David Gutman (anon. to classmates) 2 years ago While I might not have phrased my thoughts the way OP did, I do empathize. I too wouldn't mind homework that's more challenging at least w.r.t theory and mathematics. I know of at least two other people who feel exactly the same way. That being said, I know that the instructors have been doing this for quite some time so I'm of course more than happy to defer to their judgment as to what's best for the class.

Sreecharan Sankaranarayanan (anon. to classmates) 2 years ago I am sure it will get tougher with time. These homeworks are helpful for students like me to brush up on the prerequisites and get on par with the rest of the class before the meat of the material begins. It is an introductory course after all. Those requiring a higher level of rigor, please consider 10715 and leave 10701 to students like me.

Manuel (anon. to classmates) 2 years ago Agreed ^^

Brynn Edmunds 2 years ago As you can see, we have a very diverse set of skills and backgrounds within this class! Due to the large number of students in the class, there are always going to be some who think the course is easy and some who struggle. We try to balance the assignments such that it is an appropriate level of difficulty for the class, on average. Please understand that the homework assignments aim to teach students how implement the techniques discussed in class and solidify their understanding of the material. The benefit of the project is that you can implement more advanced and challenging techniques which you may find more interesting. As mentioned, 10-701 is an introductory course, meaning we teach it as such.

The breakdown for the course is written on page 5 of lecture 1 notes.

Ian Tun Chern Quah (anon. to classmates) 2 years ago Perhaps there could be bonus problems included for students who feel that the class is too easy? Many intro undergrad courses do that just to keep those who are ahead busy. Including bonus problems means they won't feel bored up until the start of the projects

Reuben Aronson 2 years ago You're not in undergrad anymore. If you're bored, do some research on your own. Read some papers. Find a book. Grad school is about knowing how to learn on your own and generate your own real questions without the instructors spoonfeeding you toy problems.

Resolved Unresolved

Rui Zhu 2 years ago Hi, I wonder if anybody could tell me what's the requirements of the group size of the project? Will a group of three do?

Abhinav Arora 2 years ago Reply below.

Resolved Unresolved

Rui Zhu (anon. to classmates) 2 years ago
Hi I wonder if anybody could tell me if there are any requirements for the group size of the project? Will a group of three do for example?

Shuo Zhao (anon. to classmates) 2 years ago Should be working

Abhinav Arora 2 years ago The project specifications will be out in some days. The groups are going to be of size 2 or size 3. This will be decided once we know the strength of the class doing the project. Some students can choose to define their own problem statement on some dataset after seeking permission from the professor. Once we know the number students who are not defining their own project, then we can come up with a group size.

Resolved Unresolved

Chia Dai (anon. to classmates) 2 years ago
Any observation on when the lecture video is usually posted? I missed the class yesterday.

Reuben Aronson 2 years ago It's been within a day or two so far.

Brynn Edmunds 2 years ago Posted. We also posted a link to the lecture video catalog in the syllabus description. The videos are immediately uploaded there following the lecture.

Ian Tun Chern Quah (anon. to classmates) 2 years ago If you open the video catalog I think it's uploaded within the same day. I know that I saw it there late last night

Resolved Unresolved

Sreecharan Sankaranarayanan (anon. to classmates) 2 years ago
Is it just me or can I not scroll to see the 4th column in the above table?

Sreecharan Sankaranarayanan (anon. to classmates) 2 years ago I guess zooming out solved it.

Resolved Unresolved

Prerna Chikersal (anon. to classmates) 2 years ago When will Hw 4 be released tentatively?

Abhinav Arora 2 years ago I think it should be sometime in the week of 22nd February. It will be due before the spring break.

Resolved Unresolved

Prerna Chikersal (anon. to classmates) 2 years ago For the midterm, when you say 1 page of notes, do you mean double-sided or single-sided?

Abhinav Arora 2 years ago The specifications for the Notes Sheet for the exam are: one sheet, 8.5 x 11 inches, one sided.

Resolved Unresolved

Vivek Nangia (anon. to classmates) 2 years ago
How many hw assignments will there be for the second half of the class? I ask as we will also be working on the project at the same time.

Brynn Edmunds 2 years ago You will have two assignments for the second half of the course. We have intentionally given you the bulk of the assignments for the first half of the course, as we know the project will take a lot of time.

Resolved Unresolved

Juncheng Zhan (anon. to classmates) 2 years ago
Will the video for lecture 10 be posted? Thank you.

Ian Tun Chern Quah (anon. to classmates) 2 years ago No, they won't be

Kidding here it is https://mediatech-stream.andrew.cmu.edu/Mediasite/Play/9259fc28a80a45049c3d9c93a91132e01d?catalog=04ba8f23-3dc2-4ad7-8e20-76f30adba077

Resolved Unresolved

Kai-Wen Liang (anon. to classmates) 2 years ago
Will the video for lecture 13 be posted? Thank you!

Brynn Edmunds 2 years ago Done.

Kai-Wen Liang (anon. to classmates) 2 years ago Thank you :)

Resolved Unresolved

Dhruv Nathawani 2 years ago
Can the TA's give us any idea when the next HW's would be released? And how many more HW's there are?

Brynn Edmunds 2 years ago There will be two more HWs before the end of the semester. The next homework will likely be released towards the end of next week or the beginning of the following one. The reason we are waiting to release this assignment is to allow you all time to work on your projects (as we assume much of spring break was dedicated to midterm prep).

Warm Regards,
Brynn

Dhruv Nathawani 2 years ago Thanks a lot :)

Resolved Unresolved

Dhruv Nathawani 2 years ago
I am having issues with opening the lectures link since yesterday. The lectures aren't loading. Is anybody else facing this issue?

Abhinav Arora 2 years ago I just tried few lectures. They seem to open for me.

Dhruv Nathawani 2 years ago Yeah exactly, they are working now and then they stop for some time. I checked with a few other students too.

Rohan Kohli 2 years ago Yup i think you're right. I have that problem very often - especially when I keep the page open for a long time (> 1 hour). Sometimes refreshing the page works for me but I sometimes have to exit the browser completely and reopen the page. It's annoying but it works for me.

Abhinav Arora 2 years ago I have seen that last sem. I think the solution to that was to keep it open. Just click the link and open it in a tab. It will keep on loading for 1 minute and then suddenly open. Some weird issue with MediaTech.

Dhruv Nathawani 2 years ago I will try closing and reopening the browser.

Okay Thanks, I guess we will have to make it work.

Rohan Kohli 2 years ago That's right. Waiting for an indefinite period of time works too but I don't have the patience so I just restart the browser!