

# Columbia University: Arts & Sciences

## Fall 2018

**Course:** STATGR5242\_001\_2018\_3-ADVANCEDMACHINELEARNING : STATGR5242\_001\_2018\_3 - ADVANCED MACHINE LEARNING  
**Instructor:** Peter Orbanz

1 - What did you learn - in terms of knowledge, skills, or perspectives - in this course?The answer to this question will generally be available in Vergil.

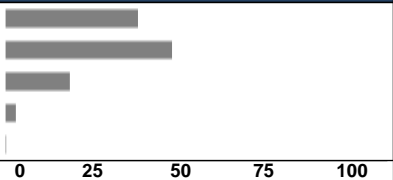
- Peter's Part: syntax and semantics of graphical models, markov chains and hidden markov models, markov fields, sampling methods (rejection/importance/MCMC/GIBS), basics of neural nets (component functions/backprop)
- John's part: basic definitions of neural networks (auto-diff, stochastic optimization), practical considerations in designing conv nets (state of the art nets such as resnet),
- machine learning
- Probabilistic models and deep learning.
- machine learning, cnn
- basis for ML, kinds of network models
- The knowledge related to Markov Chain and Neural network.
- some in depth outstanding of the machine learning concept
- HMM, Neural Networks and some other advanced machine learning techniques
- Monte Carlo, Neural networks, Tensorflow
- Advanced Machine Learning Knowledge
- Stochastic processes application, Neural Network, a theoretical understanding of ML
- Foundations for graphical models and NN
- deep learning
- Basic background and knowledge of the graphical model and Neural network. Using python and tensorflow in the homework and project.
- Graphical Models, Neural Networks, Hidden Markov Models, Sampling Algorithms
- Theories about machine learning, like graphic theory, optimizatio theory.
- Much deeper understanding of the theory behind sampling/inference and deep learning.
- MCMC & Deep learning
- I learned neural networks and deep learning in this course.
- deep learning network
- Markov chain
- Convolutional neural network, deep learning
- hmm,cnn,rl,etc
- I learned a lot about neural networks, which comprise the main focus of this course. We are instructed in the use of Python, and later a package called Tensorflow, which is used to build and run neural networks. The first half of the course discusses neural networks and related topics (such as Markov chains and Markovian sampling techniques) in a more theoretical, mathematically-inclined setting while the second course dives deeper into actual implementation of these algorithms in Python. The final project of the course, where we form groups and pick from a list of topics, involves using reinforcement learning algorithms built on top of a convolutional neural network to teach the computer to play the original Super Mario Bros. for the NES.
- Some applied machine learning techniques. Graphical models and neural networks.
- Knowledge of Machine Learning. Coding with Python.
- Machine learning and deep learning algorithm
- How to use python

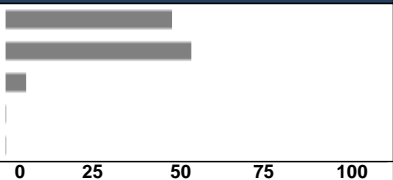
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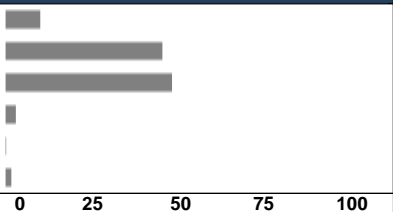
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2 - What is your overall assessment of the course?The answer to this question will generally be available in Vergil.					
Response Option	Weight	Frequency	Percentage	Percent Responses	Mean
Excellent	(5)	27	35.53%		4.13
Very Good	(4)	34	44.74%		
Good	(3)	13	17.11%		
Fair	(2)	2	2.63%		
Poor	(1)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD	Median		
76/89 (85.39%)	4.13	0.79	4.00		

3 - Would you recommend this course to another student?The answer to this question will generally be available in Vergil.					
Response Option	Weight	Frequency	Percentage	Percent Responses	Mean
Definitely recommend	(1)	34	44.74%		
Probably recommend	(2)	38	50.00%		
I'm not sure I'd recommend	(3)	4	5.26%		
Probably not recommend	(4)	0	0.00%		
Definitely not recommend	(5)	0	0.00%		
				0 25 50 75 100	
Response Rate					
76/89 (85.39%)					

4 - Please qualify your recommendations if you wish:The answer to this question will generally be available in Vergil.					
<ul style="list-style-type: none"> <li>- It has a wide coverage so that you may later choose certain methods to dig in.</li> <li>- Intro to all the fancy topics about machine learning</li> <li>- The only course in MA Stats program that actually encourages (forces, in this case) the use of Python.</li> <li>- you will learn a lot</li> <li>- It is pretty useful if you want to learn something of Python.</li> <li>- Increase more practical knowledge</li> </ul>					

5 - How does the workload in this course compare to Columbia courses with a similar structure (e.g. a lecture, seminar, laboratory, or language course)?The answer to this question will generally be available in Vergil.					
Response Option	Weight	Frequency	Percentage	Percent Responses	Mean
Much heavier workload	(1)	7	9.21%		
Heavier workload	(2)	32	42.11%		
Similar workload	(3)	34	44.74%		
Lighter workload	(4)	2	2.63%		
Much lighter workload	(5)	0	0.00%		
No basis for comparison	(6)	1	1.32%		
				0 25 50 75 100	
Response Rate					
76/89 (85.39%)					

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6 - How many hours a week did you devote to this course? (Note: Please include all time spent on this class including class time, discussion sections, readings, assignments, studying, etc.)The answer to this question will generally be available in Vergil.

- 8

- 15

- 10V

- 6h

- 20 hours

- 8

- 10 hours

- more than 20 hour per week

- 20

- 1 hour/day

- 10 hours a week

- 10

- 10 hours

- Out of all the courses I've taken this semester, I've probably spent the most overall time per week on this course. Homeworks in this course can sometimes take up to ten hours to complete depending on how much coding is required (I haven't really used Python prior to taking this course, so a lot of things that are relatively simple would still take me some time to write). The final project in this course is looking to also be the most demanding of all my projects this semester, especially since training the algorithms needed to run Mario may take days to complete. Due to how much I've learned as a result of all this work, however, I'd say it was mostly worth it.

- 5

- More than 40 hours.

- 20

- 8 hours