QST BA 885: Advanced Analytics II

Spring 2022

Instructor: Nima Doroud
Email: ndoroud@bu.edu
Office: HAR 610
Office Hours: TBD

Teaching Assistant: TBD

Class Meetings: Mondays and Wednesdays 8:00 – 10:45
Class Location: HAR 306

Course Description

This course will build on BA865 by going deeper into various aspects of Neural Networks and Deep Learning. Our programming language of choice will be Python and we will primarily use TensorFlow/Keras for implementing Deep Learning models.

Course Materials

The lecture slides and Jupyter/Colab notebooks presented during the lectures will be made available on github (Link TBD). The lectures will be base on the references below which you can refer to for further reading.

- *Deep Learning with Python (2nd Edition)* by Francois Chollet
- *Deep Leaning* by Ian Goodfellow, Yoshua Bengio and Aaron Courville
- *Deep Learning Cookbook* by Douwe Osinga

Course Evaluation (*Tentative*)

- Class contributions and exercises 30%

  You are encouraged to ask questions and actively participate in the discussions during the lectures. This can help improve the course quality and provide feedback to the lecturer. We will also have short hands-on exercises during the lectures.

- Minor assignments 30%

  There will be 3 assignments to reinforce and expand on the course concepts. They will be graded based on your grasp on the fundamentals, your approach to solving the problems and your ability to communicate your solutions.

- Major assignments 40%

  There will be a project which you can work on in pairs or on your own. The project will be broken down to 2 stages which you will report on every 3 weeks by submitting a Jupyter/Colab notebook.

Course Policies

1. Attendance

   There will be many detailed examples and discussions during my lectures as well as hands-on exercises from which you can only benefit if you are in attendance. While attendance is not mandatory, do bear in mind that it is a factor in your final grade.

2. Students with special needs

   In keeping with university policy, any student with a disability who needs or thinks they need academic accommodations must call the Office of Disability Services at 353-3658 or stop by 19 Deerfield Street to arrange a confidential appointment with a Disability Services staff member. Accommodation letters must be delivered to me in a timely fashion (within two weeks of the date on the letter and not later than two weeks before any major examination). Please note that accommodations will not be made without an official letter of accommodation.

3. Conduct policy

   You are expected to abide by the Academic Conduct Code which can be found here. Succinctly put, any work present should be entirely your own. You are also expected to conduct yourself professionally when attending the lectures.

4. Sexual misconduct/Title IX Policy

   The Questrom School of Business is committed to fostering a safe learning environment for all members of the community and preventing sexual misconduct. All forms of sexual misconduct, including rape, acquaintance rape, sexual assault, domestic and dating violence, stalking, and sexual harassment are violations of Boston University's policies, whether they happen on campus or off campus. Title IX of the Education Amendments of 1972 is a federal civil rights law that prohibits sex-based discrimination in federally funded education programs and activities. This law makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability

and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here.

5. Diversity and inclusion statement

   In preparing this course I have, to the best of my ability, been mindful of how identity and culture impact the course content. You are encouraged to share your related personal experiences and perspective which will be respected and help me improve on my ability in this regard in the future. If there are topics that you feel would benefit from incorporation of social context or varying perspective, please do let me know. I will explore resources and opportunities for us to engage a wide variety of perspectives in our classroom.

Course Schedule (*Tentative*)

Week	Topic	Notes
1	Course Logistics and review of the fundamentals	
2	Importance of data and model building	minor hw due
3	Transfer learning, Convolutional Neural Networks	Major hw due
4	Recurrent Neural Networks, Natural Language Processing	minor hw due
5	How to talk to data engineers: Docker, SQL, Cloud computing	
6 & 7	Guest lecturer, Generative models, Reinforcement Learning, Productionization	minor hw due Major hw due