THE UNIVERSITY *of*
NEW ORLEANS

DEPARTMENT OF COMPUTER SCIENCE

Syllabus, Spring 2022

CSCI 4587/5587: Machine Learning I, **Room**: Internet/TBA

Lecture: MWF: 12 NOON to 12:50 PM.

Zoom Link and Passcode to attend the class –

Zoom ID: 838 3125 3849

Passcode: 981615

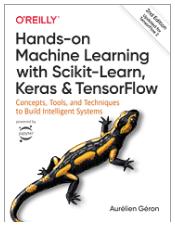
Instructor: Md Tamjidul Hoque

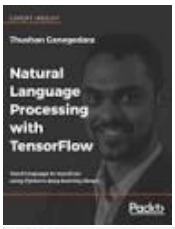
Email: thoque@uno.edu

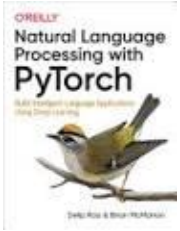
Phone: 504-280-2406

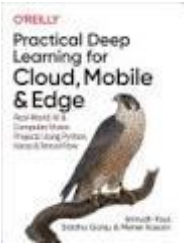
Office Hours: **Monday** 12:50 – 2:05 PM and 7:45 PM to 9:00 PM.
Wednesday 12:50 – 2:05 PM and 7:45 PM to 9:00 PM.
Friday 12:50 PM – 1:50 PM.

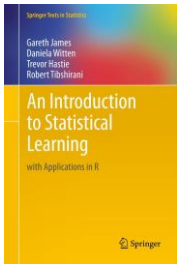
Online Office Hours:
https://uno.zoom.us/meeting/register/tZUvd-utqD8pHdNVHBVGVVN4fWzNXZ417Eys











Prerequisites: Consent of department or CSCI 2125 or CSCI 3220.

Textbooks: The slides, notes and exerices contain sufficient reading materials.

The following books are recommended for optional reading:

1. Hands-on Machine Learning with Scikit-Learn, Keras, and TensorFlow, 2nd Edition, by Aurélien Géron, O'Reilly Sep., 2019.

2. Natural Language Processing with TensorFlow, by Thushan Ganegedara.

3. Natural Language Processing with PyTorch: Build Intelligent Language Applications Using Deep Learning, by Brian McMahan and Delip Rao.

4. Practical Deep Learning for Cloud, Mobile, and Edge: Real-World AI & Computer-Vision Projects Using Python, Keras & TensorFlow, by Anirudh Koul, Meher Kasam, and Siddha Ganju.

5. An Introduction to Statistical Learning: With Applications in R, by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani. Springer, ISBN 978-1-4614-7138-7 (eBook). The book is available online for free: http://faculty.marshall.usc.edu/gareth-james/ISL/

Course Content: This course covers probabilistic as well as fundamental machine learning (ML) algorithms development using the latest ML programming frameworks such as Weka, Scikit-learn, Keras, TensorFlow, and Jupyter Notebook. It covers the following topics:

- Latest programming frameworks of machine learning applications,
- Descriptive statistics, Big/data preprocessing, exploration, mining, and visualization,
- Classification and regression,
- Principal Component Analysis
- Embedding Words and Types
- Processing Sequences Using RNNs
- Natural Language Processing with RNNs and Attention

- Advanced Sequence Modeling for Natural Language Processing
- AI in the Browser with TensorFlow.js and ml5.js.

Learning Outcomes: A programmer with the latest Machine Learning (ML) knowledge and programming frameworks will be able to 'generate' solution-code for a complex problem as well as utilizing the modern hardware architecture just by clicking a few buttons. Thus, the programmer with ML knowledge can have a significant advantage over a programmer without the ML knowledge, in terms of faster and better-performing program-code generation. The paradigm also helps a programmer focus on better solution development rather than focusing on coding syntax and code-management. In this course, the students will learn to apply tools to effectively and efficiently preprocess, visualize and analyze data for ML algorithms. They will learn the need and context of non-deterministic algorithms over the deterministic algorithms through programming projects and assignments. They will also learn machine learning applications for cognitive computing and Big Data.

Online Materials: Essential course material, assignments, announcements, etc. will be posted to this course page on Moodle, http://www.uno.edu/moodle. Make sure to check your @uno.edu email frequently.

Attendance: Your attendance in class is needed and essential for you to meet course requirements. A 5% mark is allocated for your attendance.

Grading:

Assignments (Programming + Homework)	(4) × 11% →	44%
Class Test	(3) × 11% →	33%
Best 6 out of 7	(6) × 11% →	66%
Final Examination	→	29% [**Must attend to pass**]
Attendance:	→	5%

%5: [90-100%], 4%: [85-90), 3%: [80-85), 2%: [75-80), 1%: [70-75), 0%: <70.

Grading scale: A: 90+%, B: 80-89%, C: 70-79%, D: 60-69%, F: < 60%.

Bonus: A student who will be able to produce any publishable work (approved based on superior results, recognized by the instructor during the course period) related to any given assignment(s) or the topics covered in the class will be given 10% bonus marks.

Exams: Test 1, 2 and 3: tentatively on Feb 25th, March 25th, and April 29th, respectively.
Last Class: May 13th (Friday).
Final Exam: **Date/Time -** __day, May/**14-20**/2022, 12:30 PM to 2:30 PM, **Location**: **Internet/TBA.**

Due Dates: You are responsible for handing in your assignment on time. Late submissions will be assessed at the following rates: 80% for 1-48 hours late, 60% for 49-96 hours late, 40% for 97-144 hours late, 20% for 145-168 hours late. Assignments that are over a week late will receive no credit. For online submission, use Moodle. However, if Moodle is not working for some technical reason, email me (thoque@uno.edu) the assignment. If you are unable to act according to the deadlines due to exceptional circumstances, you must inform long before the deadline or, you must provide evidence.

Conducts:
(1) All submitted works must be your own. Any academic dishonesty, including cheating, plagiarism, and conspiracy, will result in zero marks and will be reported to the appropriate authority in the university (https://www.uno.edu/media/15321).
(2) Please be on time in the class. Late coming in the class is heavily discouraged.
(3) Please avoid disruptive and noisy activities in the class and be respectful to others.

You may be interested in:

- Undergrade Machine Learning (ML) and AI Concentration, click-here for the details.
- Graduate Certificate in ML & AI, click-here for the details.
- CSCI 4588/5588 ML II (offered in **Fall** semester), click-here for sample syllabus.
- CSCI 6522 Advanced ML I (offered in **Spring** semester), click-here for sample syllabus.
- CSCI 6522 Advanced ML II (offered in **Fall** semester), click-here for sample syllabus.