Course Syllabus

DSBA 6156: Applied Machine Learning

Spring 2023

Rick Chakra

Contact Information

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Office Hours: TBA

Course Description

Practical perspectives and applications of machine learning methods and techniques including: acquisition of declarative knowledge; organization of knowledge into new, more effective representations; development of new skills through instruction and practice; and discovery of new facts and theories through observation and experimentation.

Objectives of the Course

Organizations, across all industries, are collecting massive amounts of data at an accelerating pace. This brings many challenges, including data processing, storage, transformation, analysis, reporting, and operationalization. This course will cover the various aspects of these processes, with a focus on extracting actionable insights from the data. Special attention will be paid to statistical, machine learning, and simulation methods that enable the analysis of data. Students will learn (a) the basic principles, concepts, and methods of analytics in general and machine learning in particular; (b) how to assess and evaluate learning methods; (c) how to utilize analytics for the benefit of organizations and society; and (d) how to present and communicate findings and results as actionable insights.

Instructional Method

Materials presented in this course will be covered through lectures and use cases. Key topics will be further explored through hands-on application of use cases. Students will gain both the theoretical understanding of machine learning concepts, as well as the experience of putting such concepts and principles into practice.

Textbook

"Machine Learning for Predictive Data Analytics: Algorithms, Worked Examples, and Case Studies," by John D. Kelleher, Brian Mac Namee, Aoife D'Arcy, Second Edition, 2020, Massachusetts Institute of Technology.

Topics

Introduction

Data Preparation and Exploration

Information-based Learning

Similarity-based Learning

Probability-based Learning

Error-based Learning

Deep Learning

Evaluation

Unsupervised Learning

Reinforcement Learning

Course Requirements and Grading Policy

Project: 50%

Midterm Exam: 25%

Final Exam: 25% (not cumulative)

Additional Policies

Attendance: Students are expected to attend all class meetings and to arrive before the class starts. Class topics are integrated, with each week building on prior weeks. Failure to attend or to arrive on time can adversely affect both individual performance, ability to contribute to the group project, and the earned letter grade. If a student misses a class due to work or other reasons, it is their responsibility to get notes from peers; instructors do not hold extra repeat class sessions. Students will be allowed to miss no more than 3 classes without affecting their final grade. For every 3 absences the final grade will be lowered by one letter grade.

Grade Discussions: The instructor will discuss grades only in person (and not via telephone or e-mail) and only with the student (not with parents, spouses, etc). Office hours are listed in the syllabus.

Electronic Devices: Students are not allowed to use any electronic devices during the class, unless otherwise instructed by the instructor.

Academic Integrity

All students are expected to adhere to the **UNC Charlotte Code of Student Academic Integrity** ⤷ **(http://legal.uncc.edu/policies/ps-105.html)** **(http://legal.uncc.edu/policies/ps-105.html** ⤷ **(http://legal.uncc.edu/policies/ps-105.html**)) as specified in the current **Catalog** ⤷ **(http://www.provost.uncc.edu/Catalogs/)** (**http://catalog.uncc.edu/** ⤷ **(http://catalog.uncc.edu/**)). Among other things, this code forbids cheating, fabrication or falsification of information, multiple submission of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty.

Inclement Weather

University Policy Statement #13 states the University is open unless the Chancellor announces that the University is closed. The inclement weather hotline number to call is 704-786-2877. In the event of inclement weather, check your email the morning of class. The instructors will use their best judgment as to whether class should be held understanding that some of you commute from far away and the instructors will notify you by email if class is cancelled.

Course Summary:

Date	Details	Due
Wed Jan 11, 2023	📅 **202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning**	5:30pm to 8:15pm

Date	Details	Due
	[(https://uncc.instructure.com/calendar?event_id=624033&include_contexts=course_188795)](https://uncc.instructure.com/calendar?event_id=624033&include_contexts=course_188795)	
Wed Jan 18, 2023	🗓 **[202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624044&include_contexts=course_188795)](https://uncc.instructure.com/calendar?event_id=624044&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Jan 25, 2023	🗓 **[202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624046&include_contexts=course_188795)](https://uncc.instructure.com/calendar?event_id=624046&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Feb 1, 2023	🗓 **[202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624043&include_contexts=course_188795)](https://uncc.instructure.com/calendar?event_id=624043&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Feb 8, 2023	🗓 **[202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624034&include_contexts=course_188795)](https://uncc.instructure.com/calendar?event_id=624034&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Feb 15, 2023	🗓 **[202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624037&include_contexts=course_188795)](https://uncc.instructure.com/calendar?event_id=624037&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Feb 22, 2023	🗓 **[202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624042&include_contexts=course_188795)](https://uncc.instructure.com/calendar?event_id=624042&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Mar 8, 2023	🗓 **[202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624035&include_contexts=course_188795)](https://uncc.instructure.com/calendar?event_id=624035&include_contexts=course_188795)**	5:30pm to 8:15pm

Date	Details	Due
Wed Mar 15, 2023	📅 **202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624031&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Mar 22, 2023	📅 **202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624036&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Mar 29, 2023	📅 **202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624040&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Apr 5, 2023	📅 **202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624039&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Apr 12, 2023	📅 **202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624045&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Apr 19, 2023	📅 **202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624041&include_contexts=course_188795)**	5:30pm to 8:15pm
Wed Apr 26, 2023	📅 **202310-Spring 2023-DSBA-6156-U90-Applied Machine Learning (https://uncc.instructure.com/calendar?event_id=624038&include_contexts=course_188795)**	5:30pm to 8:15pm
	📝 **Project (https://uncc.instructure.com/courses/188795/assignments/1714579)**	due by 11:59pm