

RUTGERS

Cyber Security and Artificial Intelligence

COURSE Description: 790:574:90

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Meetings Online (6 Weeks Program)

Textbooks Multiple resources will be available on our Online Learning System (SAKAI)

I. Course Description:

What is artificial intelligence (AI)? What does it mean for Cyber Security? And how can politics benefit from the integration of AI and Cyber Security? This is an online course designed to answer the above three questions. In this course, a mix of key AI technologies will be introduced to support the understanding of the decision making process when cyber security is concerned in relation to politics.

The course will address key AI technologies including machine learning and natural language processing in an attempt to help in understanding their role in cyber security and the implications of these new technologies to the world of politics. AI deficiently will complement and strengthen the cyber security practices and will improve their applications in enhancing our security.

II. Course Objectives:

1. Introduction to Artificial Intelligence and Cyber security
2. Artificial Intelligence and Machine Learning
3. Using Artificial Intelligence Tools to Enhance Security
4. Politics and Big data and Decision Making Process
5. Artificial Intelligence in Politics
6. The Future of AI in Advancing Security and Promoting

III. Grading Criteria

10% - Quizzes

15 % - Technical Assignment

25 % - Articles Discussion – CRN

50 % - Course Project Research Paper and Presentations

The important structure of the course will be according to the following:

(a) Practice Quizzes:

In weeks 2, 3, 4 and 5, there will be quizzes on the previous weeks' content. These will include 5-10 questions drawn randomly from a larger question pool. The quiz will allow unlimited submissions and accept the highest score to encourage students to re-take the quiz until they are proficient.

(b) Technical Assignment:

Students will address the technical assignment in each week as a forum discussion. They will need to review the reading or video assignment and post their technical assessment of the topic.

(c) Articles Discussion – CRN:

Students will have a choice of 3 articles. Each one will be a separate thread in the Forums. Students must choose 1 to respond to in writing. They must also critique 2 peers using video, via Kaltura.

(d) Course Project Research Paper and Presentations:

A research project paper and presentations will be our final part. Each student will propose one or more topics in week 1 for approval. Then one topic will be assigned to each student to work on during the following 5 weeks. The student is expected to prepare a final paper and a PowerPoint Video Presentation, 10-15 minutes long (approx.), created using Kaltura. Information and tutorials on using Kaltura can be found here: <https://ru-stream.rutgers.edu/>

IV. Academic Integrity

The consequences of scholastic dishonesty are very serious. Please review the Rutgers' academic integrity policy.

Academic integrity means, among other things:

- Develop and write all of your own assignments.
- Show in detail where the materials you use in your papers come from. Create citations whether you are paraphrasing authors or quoting them directly. Be sure always to show source and page number within the assignment and include a bibliography in the back.
- Do not fabricate information or citations in your work.

- Do not facilitate academic dishonesty for another student by allowing your own work to be submitted by others.

If you are in doubt about any issue related to plagiarism or scholastic dishonesty, please discuss it with your instructor.

Other sources of information to which you can refer include:

- Rutgers' Academic Integrity website <http://academicintegrity.rutgers.edu/>
- Code of Student Conduct
- Eight Cardinal Rules of Academic Integrity

V. Cheating and Plagiarism

Short version: Don't cheat. Don't plagiarize.

Longer version: Cheating on tests or plagiarizing materials in your papers deprives you of the educational benefits of preparing these materials appropriately. It is personally dishonest to cheat on a test or to hand in a paper based on unacknowledged words or ideas that someone else originated. It is also unfair, since it gives you an undeserved advantage over your fellow students who are graded on the basis of their own work. In this class we will take cheating very seriously. All suspected cases of cheating and plagiarism will be automatically referred to the Office of Judicial Affairs, and we will recommend penalties appropriate to the gravity of the infraction. The university's policy on Academic Integrity is available at:

http://academicintegrity.rutgers.edu/files/documents/AI_Policy_9_01_2011.pdf ¹¹

I strongly advise you to familiarize yourself with this document, both for this class and for your other classes and future work. To help protect you, and future students, from plagiarism, we require all papers to be submitted through Turnitin.com.

Since what counts as plagiarism is not always clear, I quote the definition given in Rutgers' policy:

Plagiarism: Plagiarism is the use of another person's words, ideas, or results without giving that person appropriate credit. To avoid plagiarism, every direct quotation must be identified by quotation marks or appropriate indentation and both direct quotation and paraphrasing must be cited properly according to the accepted format for the particular discipline or as required by the instructor in a course. Some common examples of plagiarism are:

- Copying word for word (i.e. quoting directly) from an oral, printed, or electronic source without proper attribution.
- Paraphrasing without proper attribution, i.e., presenting in one's own words another person's written words or ideas as if they were one's own.

- **Submitting a purchased or downloaded term paper or other materials to satisfy a course requirement.**
- **Incorporating into one’s work graphs, drawings, photographs, diagrams, tables, spreadsheets, computer programs, or other nontextual material from other sources without proper attribution.**^[2]

A SPECIAL NOTE: Students often assume that because information is available on the Web it is public information, does not need to be formally referenced, and can be used without attribution. This is a mistake. *All* information and ideas that you derive from other sources, whether written, spoken, or electronic, must be attributed to their original source. Such sources include not just written or electronic materials, but people with whom you may discuss your ideas, such as your roommate, friends, or family members. They deserve credit for their contributions too!

Judgments about plagiarism can be subtle. If you have any questions, please feel free to ask for guidance.

[1] This web link was corrected on July 13, 2012. S. Lawrence

[2] http://academicintegrity.rutgers.edu/files/documents/AI_Policy_9_01_2011.pdf Updated with the University’s current language on July 13, 2012. S. Lawrence

VI. Class Schedule

Week	Topics
1	Course Introduction Introduction to Artificial Intelligence and Cyber security
2	Artificial Intelligence and Machine Learning
3	Using Artificial Intelligence Tools to Enhance Security
4	Politics and Big data and Decision Making Process
5	Artificial Intelligence in Politics
6	The Future of AI in Advancing Cyber Security

Lecture Videos:

20 minutes long (approx.), created using Kaltura. Information and tutorials on using Kaltura can be found here: <https://ru-stream.rutgers.edu/>

Follow-up Video:

After each week, I will post a follow-up video responding to the students' discussion for the week.