

COMP 4900: Introduction to Natural Language Processing

LECTURES: Time and Location: please see public class schedule

INSTRUCTOR: Yuhong Guo, [YuhongGuo\(at\)cunet.carleton.ca](mailto:YuhongGuo(at)cunet.carleton.ca)

OFFICE HOURS: Thursday 2pm-3pm or by appointment, via zoom; links are provided on Brightspace

COURSE SCHEDULE PAGE: Information is available on Brightspace.

PREREQUISITES

COMP3105 and (MATH1104 or MATH1107); familiarity with probability and Python programming.

TEXTBOOKS: There are no mandatory textbooks. Below are some reference materials (free online)

- Dan Jurafsky and James H. Martin. [Speech and Language Processing \(3rd ed. draft\)](#)
- Jacob Eisenstein. [Natural Language Processing](#)
- Yoav Goldberg. [A Primer on Neural Network Models for Natural Language Processing](#)
- Other reading materials (e.g., papers) will be provided.

DESCRIPTION

AI has fundamentally transformed the field of natural language processing through the development of large language models. This course will provide an introduction to the fundamental techniques and methodologies of modern natural language processing. The following topics will be covered: text classification, word embedding, sequence models, language models, machine translation, self-attention and transformers, BERT and pre-trained models, question answering, and large language models.

GRADING

- Assignments (2): 38% Exam: 14%
- Class Participation: 4% Paper Presentation: 10%
- Course Project (Proposal+ Presentation + Report): 34%

POLICIES and RULES

- Course project will be conducted in self-organized groups (2~3 students). Other components (assignments, exam, paper presentation) should be completed on an individual basis.
- Exam (open-textbook) will take place during the regular scheduled class time.
- Late submission of assignments: 10% deduction for each of the first 5 days beyond the due time. Submissions that are late for more than 5 days will not be accepted.
- Exam, presentation, and project: late submissions will not be accepted.
- **All submissions** are handled **electronically** through **Brightspace**. It is your responsibility to ensure that the materials you submit work properly.
- All the Carleton's policies on academic accommodations and academic integrity hold for this course. All these matters will be handled by appropriate authorities. If you have any questions regarding these issues, please reach out to the Administrative Staff at the School of CS.

- Many of the assessed activities in this course were designed for independent completion by an individual (for assignments, exam, and paper presentation) or a group (for course project). Unless explicitly specified, utilizing any assistance systems, such as ChatGPT, to generate automated solutions will be considered academic misconduct. An exception to the above rule is made for automated grammar checking tools.
- Any self-declaration form must be submitted within 48 hours following the corresponding assessment deadline.

Undergraduate Academic Advisors

The Undergraduate Advisors for the School of Computer Science are available in Room 5302HP; or by email at scs.ug.advisor@cunet.carleton.ca. The undergraduate advisors can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisors will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and Writing Tutorial Services.

SCS Computer Laboratory

Students taking a COMP course can access the SCS computer labs. The lab schedule and location can be found at: <https://carleton.ca/scs/tech-support/computer-laboratories/>. All SCS computer lab and technical support information can be found at: <https://carleton.ca/scs/tech-support/>. Technical support staff may be contacted in-person or virtually, see details: <https://carleton.ca/scs/tech-support/contact-it-support/>.

University Policies:

• Academic Accommodations

Carleton is committed to providing academic accessibility for all individuals. Please review the academic accommodation available to students here: <https://students.carleton.ca/course-outline/>.

• Academic Integrity

Student Academic Integrity Policy. Every student should be familiar with the Carleton University Student Academic Integrity policy. A student found in violation of academic integrity standards may be sanctioned with penalties which range from a reprimand to receiving a grade of F in the course, or even being suspended or expelled from the University. Examples of punishable offences include plagiarism and unauthorized collaboration. Any such reported offences will be reviewed by the office of the Dean of Science. More information on this policy may be found on the ODS Academic Integrity page: <https://carleton.ca/registrar/academic-integrity/>.

Plagiarism. As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean of Science. More information and standard sanction guidelines can be found here: <https://science.carleton.ca/students/academic-integrity/>.

Unauthorized Collaboration. Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis".