

COMP 4900 – Eye Tracking in Human-Computer Interaction

School of Computer Science, Carleton University
Course Outline

Course Information

- *Instructor:* Nadine Marie Moacdieh
- *Contact:* nadine.moacdieh@carleton.ca
- *Office:* HP 5135
- *Classroom:* Room location is posted on the public class schedule
- *Lectures:* Thursdays from 14:35 to 17:25 (in person)
- *Office hours:* By appointment
- *Course Website:* [On Brightspace](#)
 - Brightspace access for University of Ottawa Students:
<https://gradstudents.carleton.ca/faculty-of-graduate-and-postdoctoral-affairs-access-to-brightspace/>
- For information about Carleton's academic year, including registration and withdrawal dates, see [Carleton's Academic Calendar](#).

Course Calendar Description

This course explores the use, benefits, and limitations of eye tracking as an input device, a usability evaluation tool, and as part of an adaptive interface. Topics include human visual attention, techniques to assess user state, types of eye trackers, and the eye tracking data collection, processing, and analysis needed to conduct a research study. Priority will be given to the students in the OCICS joint institute and the students in the thesis-based research programs.

Required Textbook(s) and Other Resources

There is no textbook for this course. Readings, slides, and other resources will be available on Brightspace throughout the term.

Course Objectives

Students who take this course will gain an understanding of how eye tracking can provide insight into people's attention and inform the design of better interfaces. Students will gain experience working with an eye tracker and design an eye tracking study related to an HCI topic.

Topics Covered

Main topics will include:

- History of eye tracking
- Types of eye trackers
- Eye tracking metrics

- Eye tracking experiments
- Eye tracking as an input device
- Pupillometry
- Adaptive displays
- Eye tracking in different application domains

Assessment Scheme

- Class and online participation (20%)
- Discussion lead (20%)
- Project (60%), broken down as follows:
 - Proposal (10%)
 - Presentation (20%)
 - Final report (30%)

Please note that late submissions will lose a point for every hour they are late. If there are unforeseen circumstances that prevent you from completing the work, you can submit a deferral form (see Deferral Policy section). Note that technical problems are not an excuse for late work, so make sure to submit often and well before the deadline. While there is no grade for attendance in this course, students are expected to attend class and participate in class discussions.

Academic Integrity Policy

Projects can be done individually or in groups of two. The discussion lead may also be done in groups depending on the number of students in the course. Apart from that, you cannot share your work with classmates or copy their work. You are never permitted to post, share, or upload course materials without explicit permission from your instructor. All cases of plagiarism will be reviewed by the office of the Dean of Science. Penalties for such offences can be found on the [ODS webpage](#).

Also, the use of any AI system will be considered academic misconduct. This includes, but is not limited to, chatbots (e.g., ChatGPT, Google Bard, Bing Chat), research assistants (e.g., Elicit), and image generators (e.g., Stable Diffusion, Dall-E), etc. An exception to the above rule is made for automated grammar and punctuation checking tools (such as Grammarly).

References to any material you use but did not originate must use an appropriate (e.g., IEEE, APA) citation style. Failure to reference materials correctly can result in severe penalties, and the use of manufactured (i.e., falsified) or misleading references will be treated as evidence of plagiarism and considered academic misconduct. If you are unsure of the expectations regarding academic integrity (how to use and cite references, how much collaboration with classmates is appropriate), please ask your instructor.

Deferral Policy

If unforeseen circumstances arise that prevent you from completing your deliverables on time, you can submit a [self-declaration form](#) by email to your instructor. Please consult the university's policies for [deferred term work](#) for full details.

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 this page for details: <https://carleton.ca/scs/tech-support/contact-it-support/>.

Graduate Academic Advisors

The Graduate Advisors for the School of Computer Science are available in Room 5302 HP or by email at grad.scs@carleton.ca. The graduate advisors can assist with understanding your academic audit and the remaining courses required to meet graduation requirements.

University Policies and Rules

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/>. Also, note that, as defined by the 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".