

COMP 4102, Fall 2026

Computer Vision

Lectures

Tuesdays, Thursdays 8:35-9:55 AM

Start date: September 10

Classroom: Check Carleton Central for the room location

Instructor

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Course Description

This course introduces the fundamental principles and techniques of computer vision. A tentative list of topics includes:

- Digital image formation and processing
- Detection and analysis of visual features
- Homography
- RANSAC
- Neural networks
- Camera models
- Stereo
- Epipolar
- Optical flow
- Segmentation
- Applications

Learning Outcomes

At the end of this course, students will be able to:

- Explain the basic terms, concepts and applications of computer vision, including reference to at least one real-world system.
- Apply basic mathematical techniques to solve problems in computer vision.

Prerequisite

(COMP 2404 or SYSC 3010 or SYSC 3110) and (MATH 1104 or MATH 1107). Basic linear algebra and calculus, programming in Python.

Evaluation

- In-class quizzes: 7%
- Assignments: 3% - **September 29, Oct 20, Nov 10 (tentative)**
- Midterm 1: 20% - during the **3rd week of October (tentative)**
- Midterm 2: 20% - during the **3rd week of November (tentative)**
- Final Project: 10%
- Final Exam: 40%

Final Exam Requirement

Regardless of any reweighting resulting from a missed midterm, students must obtain at least 40% on the final exam to pass the course.

Learning Material

- Slides will be posted in Brightspace. No mandatory textbook, but a few good textbooks will be recommended. They are available online at no cost.
- Every student that has been enrolled in this course is required to have a laptop. For more information, please visit <https://carleton.ca/scs/scs-laptop-requirement/> and then review the requirements at <https://carleton.ca/scs/scs-laptop-requirement/laptop-specs/>.
- For assignments related to neural networks, a Google colab subscription or similar services are highly recommended (14-70\$ / month) or you can use a GPU-enabled computer. School of computer science also has a very limited number of GPUs.

Important Considerations

Assignments

- The assignments are intentionally assigned a relatively small portion of the course grade, but this should not be interpreted as meaning that they are unimportant. They are designed to give you hands-on experience with both theoretical concepts and coding techniques covered in the course. Midterms and the final exam will assess a broader range of course material, but some questions may specifically test your understanding of work you carried out in the assignments. Therefore, the benefit of completing the assignments carefully goes beyond the marks assigned directly to them.
- **Late submission of assignments:** Assignments submitted after the deadline will receive a 10% deduction per 24-hour period, up to a maximum of three days. Assignments submitted more than 72 hours late will not be accepted and will receive a grade of zero.

Missed Midterms

- **Missing Midterm 1:** If Midterm 1 is missed for a reason approved under Carleton University's Academic Consideration Policy, its 20% weight will be transferred to Midterm 2, making Midterm 2 worth 40%. If the student subsequently misses Midterm 2, no further

accommodation will be provided for Midterm 1, and the student will receive a grade of zero for Midterm 1.

- **Missing Midterm 2:** If Midterm 2 is missed for a reason approved under Carleton University's Academic Consideration Policy, its 20% weight will be transferred to the final exam, making the final exam worth 60%.
- **Missing both midterms:** If both Midterm 1 and Midterm 2 are missed for reasons approved under Carleton University's Academic Consideration Policy, the student will receive a grade of zero for Midterm 1. The 20% weight of Midterm 2 will be transferred to the final exam, making the final exam worth 60%.

In-Class Pop-Up Quizzes

There will be up to 15 short in-class quizzes during the term using a real-time interaction tool such as Wooclap. Students will need a laptop, tablet, or phone to participate. The quizzes are intended to make lectures more interactive and will focus on material being discussed in class. Their exact dates and times will not be announced in advance. A quiz may take place at any point during a lecture, depending on the topic, pace of the class.

Quiz Grading: Correct answer: 100%; Incorrect answer: 50%; Missed quiz: 0%.

Missed Quizzes: To account for missed quizzes for any reason, the lowest 30% of each student's quiz grades, rounded up to the nearest whole quiz, will be automatically dropped when calculating the final quiz grade. The 30% drop is intended to account for missed quizzes, including absences due to short-term circumstances; additional academic consideration will not normally be provided for individual missed quizzes.

Final Project Presentation and Demonstration:

Students may be required to participate in a live demonstration and/or Q&A about their submitted final project. The purpose is to verify their understanding of the submitted work and clarify aspects of the project where needed. These sessions will be scheduled between December 2 and 11 and may take place outside the regular class time.

Questions Before Deadlines

Questions about assignments and exams may not be answered within 24 hours of the due date.

AI Usage (e.g. ChatGPT, Claude, Copilot)

- **For Assignments:** You may use AI tools as a learning aid, for example, to explain concepts, clarify material, or help you understand an approach. However, the work you submit must be your own. You may not use AI to generate assignment solutions for you and submit them as your work. A useful rule is: AI may help you understand how to do the assignment, but it should not do the assignment for you.
- **For final project:** You may use AI tools to help you understand concepts, explore ideas, troubleshoot problems, or learn how to use relevant methods and technologies. However, the submitted project must represent your own work and understanding. You may not simply have an AI system generate the project, or substantial parts of it, and submit that work as your own. You should be able to explain, justify, and demonstrate the work you submit, including during a project demo or Q&A if requested.

- **For Quizzes:** Quizzes will be administered using an interactive tool such as Wooclap. You may use a laptop, tablet, or cellphone only to access and submit the quiz, and an approved non-programmable calculator may also be used. All other use of electronic devices or resources, including AI tools, as well as communication with others during the quiz, is prohibited.
- **Midterms and final exam:** Midterms and exams are expected to be completed individually, and without electronic aid, except for an approved non-programmable calculator; any communication or access of electronic devices (e.g. cellphones) during the test will be considered cheating. Use of Smart Glasses (or other similar assistive technologies) before or during a test is strictly prohibited and is considered an academic integrity violation. Even if you have prescription glasses with assistive technologies, you will not be allowed to use them during the test, so please make sure that you have acceptable prescription glasses. The proctor has the right to ask to inspect your glasses before or during the test. In addition, unless authorized with PMC accommodations, you are NOT allowed to use headphones nor ear buds during a test. Also, during a test, if you choose to wear a baseball cap, sunglasses or anything else that would prevent a proctor from monitoring where your eyes are focused during the test, you will likely be asked by a proctor to move to a different seat. Lastly, you must submit your test before leaving the classroom or it won't be graded.
- The instructional team may use AI-assisted tools to facilitate grading or feedback.

For student concerns

If you have any concerns regarding this course, your first point of contact is me. Please email me or visit during my student hours, and I will do my best to address your concerns. If I cannot resolve the issue, the next point of contact is the School of Computer Science at studentconcerns@scs.carleton.ca. If the concern remains unresolved, the final point of contact is the Office of the Dean of Science at ODScience@carleton.ca. Please follow this order of contact.

Note: You can also bring your concerns to [Ombuds](#) 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 this page for details: <https://carleton.ca/scs/tech-support/contact-it-support/>.

Mental Health and Wellness

The [Carleton Wellness Website](#) is a wonderful resource link to include in the course outline for students.

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

If you are unsure of the expectations regarding academic integrity (how to use and cite references, how much collaboration with classmates is appropriate), ask your instructor. Sharing assignment specifications, slides, handouts and similar materials, or posting them online (to sites like Chegg, CourseHero, OneClass, etc.) is always considered academic misconduct. You are never permitted to post, share, or upload course materials without explicit permission from your instructor.

Academic integrity offences are reported to the office of the Dean of Science. Penalties for such offences can be found on the ODS webpage: <https://science.carleton.ca/academic-integrity/>

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 here: <https://carleton.ca/registrar/academic-integrity/>

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/>.

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.