CSC420: Intro to Image Understanding

Information Sheet

September 8, 2021

1 Course Description

This class is an introduction to fundamental concepts in image understanding, the subdiscipline of artificial intelligence that tries to make the computers "see". It will survey a variety of interesting vision problems and techniques. Specifically, the course will cover image formation, features, object and scene recognition and learning, multi-view geometry and video processing. The goal of the class will be to grasp a number of computer vision problems and understand basic approaches to tackle them for real-world applications.

2 Course Information

Semester	Fall 2021
Sections LEC2501 & LEC5101 (Babak Taati)	Location: BA 1130 Class Time: Thursday 18:00 — 20:00 Tutorials: Thursday 20:00 — 21:00
Section LEC0101 (Sayyed Nezhadi)	Location: RW 117 Class Time: Thursday 13:00 — 15:00 Tutorials: Thursday 15:00 — 16:00
Office Hours (online)	Fridays 10:00-12:00 (all sections)
Webpage	https://q.utoronto.ca/ Course material (lecture notes, reading material, assignments, announcements, etc.) will be posted on **Quercus**
Forum	**Quercus** or **Piazza** (we will take a vote on the first day) TAs will try to answer unanswered questions within 2 business days. **Do not expect immediate response** from the TAs. Do not expect answers during the weekends.
Textbook	http://szeliski.org/Book/ Richard Szeliski's on-line textbook is a very good resource and is freely available online. We will assign readings from the Sept 3, 2010 version, but you can also check out the draft of the newer (2021) version on the same link. For newer topics we will assign papers and online material to read.
Assignments	https://markus.teach.cs.toronto.edu/csc420-2019-09/ Should be submitted on MarkUs. You will automatically be added to MarkUs if you're taking the course. Please do **not** email me or the teaching support staff if you are not on it yet at the beginning of the semesters. This will happen in a week or two.

3 Instructor

Name Babak Taati (Sections LEC2501 & LEC5101)
Sayyed Nezhadi (Section LEC0101)

Email csc420-2021-09@cs.toronto.edu (use this email if you want to reach both instructors)
taati@cs.toronto.edu (use this email if you want to reach BT (LEC2501 & LEC5101)
snezhadi@cs.toronto.edu (use this email if you want to reach SN (LEC0101)
We will **not** respond to CSC420 related emails sent to our other email addresses.
You **must** include CSC420 in the subject line.
Questions about the course material and assignments **must** be posted on the forum or asked during office hours.
Do **not** attempt to send zip files via email, they will be deleted by the mail server.

4 TAs

(all 3 sections of the course)

Parsa Mirdehghan
Wenzheng Chen
Soroush Farghadani
Mohamed Khodeir
Kian Kianpisheh
Selena (Zihan) Ling
Abhishek Moturu
Balagopal Unnikrishnan
Dhruv Verma
Haoping Xu

Please do **not** email the TAs to ask questions. Answering email questions is not part of their contract and they are instructed not to respond. Please post questions about the course material and assignments on the forum, or ask them during the office hours.

5 Grading

Assignments 65%
There will be 4 assignments, posted every two weeks, starting with the second week. Assignments 1, 3, and 4 will be worth 15% of the grade. Assignment 2 will be worth 20% of the grade. Assignments will consist of problem sets and programming problems with the goal of deepening your understanding of the material covered in class.

Final exam 35%

6 Policy

Assignments	Individually For each assignment, you are allowed to work together with **one** other student in class. However, you are still expected to write the solutions/code/report in your own words; i.e. no copying. If you choose to work together with another student, you **must** write this in your assignment submission. For example, on the first line of your **report.pdf** file (after your own name an information, and before starting your answer to Q1), you should have a sentence that says: *"In solving the questions in this assignment, I worked together with my classmate [name & student number]. I confirm that I have written the solutions/code/report in my own words".*
Deadline	The solutions to the assignments should be submitted by **10:59:00 pm on the date they are due**. The first hour (up to 11:59:00 pm) incurs no lateness penalty. After that, from 61 minutes late to 24 hours will count as one late day.
Lateness	Each student will be given a total of 3 free late days (**grace tokens**). This means that one can hand in three of the assignments one day late, or one assignment three days late. It is up to the student to make a good planning of his/her work. After one has used the 3 day budget, the late assignments will not be accepted.
Plagiarism	We take plagiarism very seriously. Assignments must represent your own work. Read how not to plagiarize: http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize.
Special considerations	Extensions will only be given with UofT approval (formal signed letter of accommodation from the university accessibility services office) and up to a maximum of 7 days.
Remark requests	Within 1 week only. Will not be accepted afterwards.

7 Deadlines

The table provides **tentative** dates on which assignments will be posted and their due date.

Term Work	Post Date	Due Date
Assignment 1	Thursday Sep 16	Monday Oct 4
Assignment 2	Thursday Oct 7	Monday Oct 25
Assignment 3	Thursday Oct 28	Monday Nov 15
Assignment 4	Thursday Nov 18	Monday Dec 6

8 Course Schedule

A **tentative** schedule for this term is as follows:

Week #	Dates	Topic
1	Sep 9	Introduction & linear filters
2	Sep 16	Edges
3	Sep 23	Image pyramids &
4	Sep 30	Deep learning
5	Oct 7	Deep learning
6	Oct 14	Corner detection & optical flow
7	Oct 21	Scale-invariant keypoints & SIFT
8	Oct 28	Affine transformation & RANSAC
9	Nov 4	Camera models & homography
-	(reading week)	-
10	Nov 18	Homography (cont'd)
11	Nov 25	Stereo
12	Dec 2	Object detection