

CSC420: Intro to Image Understanding

Information Sheet

September 5, 2019

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 2019
Location	BA 1130
Time	Mondays 6-8 pm; Tutorials Monday 8-9 pm
Webpage	https://q.utoronto.ca/ Course material (lecture notes, reading material, assignments, announcements, etc.) will be posted on Quercus
Forum	Quercus , “Discussions” section Students should post questions / discussions in a forum style manner, either to their instructors or to their peers. 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. 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).

3 Instructor

Name Babak Taati

Email csc420-2019-09@cs.toronto.edu

I will **not** respond to CSC420 related emails sent to my other emails.

You **must** include CSC420 in the subject line.

Questions about the course material, assignments, or project **must** be posted on Quercus or asked during office hours.

Do **not** attempt to send zip files via email, they will be deleted by the mail server.

4 TAs

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Office Hours (2 hours per week) Tuesdays 11:00-12:00 (BA2283)

Thursdays 4:00-5:00 pm (BA3289)

5 Grading

Quiz 24%

There will be 2 quizzes. Each quiz will be worth 12% of the grade. They will happen during lecture hours (6-7). The timing of each quiz will be announced a week in advance. Quizzes must be solved individually.

Assignments 48%

There will be 4 assignments, posted every two weeks, starting with the second week. Each assignment will be worth 12% of the grade. They will consist of problem sets and programming problems with the goal of deepening your understanding of the material covered in class.

Project 28%

Each student will be expected to complete a project. The grade will evaluate a project proposal (3% of the grade), a project report (15% of the grade) and a presentation (10% of the grade). In the presentation (you'll be asked to make a video), each student will need to clearly present and be capable to defend his/her individual work.

There will be **no** exam.

6 Policy

Assignments	Individually The students should not discuss the assignments and should solve them individually .
Project	Individually or in pairs; Groups of 3 available with permission for larger projects. The project should be done individually or in your group. If a project is done in a group, each student should still hand in his/her own report and defend the project on his/her own. Copy and pasted text between group members will constitute plagiarism. Project presentations will be in the form of preparing a video. From the report it should be clear what each student has contributed to the project. The course will provide a list of possible projects to choose from. With approval of the instructor, a student will also be able to propose his/her own project.
Deadline	The solutions to the assignments should be submitted by 10:59 pm on the date they are due . The first hour (up to 11.59 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. 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 and projects must represent your own work. Read how not to plagiarize: http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize .
Special considerations	With UofT approval (or attestation form in emergency situations), up to 2 days might be given. Extension requests beyond that will not be granted.
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. The list of available projects will be made available mid October.

Term Work	Post Date	Due Date	Tentative return date
Assignment 1	Sep 17	Sep 24	Oct 7
Assignment 2	Oct 1	Oct 8	Oct 22
Project Proposal		Oct 24	Oct 29
Assignment 3	Oct 22	Oct 29	Nov 12
Assignment 4	Nov 19	Nov 26	Dec 10
Project Presentation		Dec 3	Dec 17
Project Report		Dec 3	Dec 17

The solutions to the assignments / project should be submitted by 10.59 pm on the date they are due. First hour incurs no penalties. Anything from 61 minutes late to 24 hours will count as one late day.

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 & keypoint detection
4	Sep 30	SIFT
5	Oct 7	Matching
-	(thanksgiving)	-
7	Oct 21	Intro to deep learning
8	Oct 28	Homography & camera models
-	(reading week)	-
9	Nov 11	Homography (cont'd)
10	Nov 18	Stereo
11	Nov 25	Object detection
12	Dec 2	Object detection (cont'd)
12	Dec 9	Adversarial networks