UTM Campus

CSC 420: Intro to Image Understanding

Information Sheet

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. Since Kinect is popular these days, we will also try to squeeze recognition with RGB-D data into the schedule. 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.

Course Information

Semester	**Winter 2023**
Location	**MN3190**
Time	**Mondays 9-11am**
Tutorial	TUT0101 on **Mondays 1-2pm**, TUT0102 on **Mondays 2-3pm**
Webpage	`http://www.cs.utoronto.ca/~fidler/teaching/2023/CSC420.html`
Online Classroom	`https://q.utoronto.ca/` (Quercus)
	We will post announcements and assignments on Quercus. The students will also be able to post questions / discussions in a forum style manner, either to their instructors or to their peers.
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.
Lecture Notes	Lecture notes and other required readings will be posted on the course website.

Instructor

Name	**Sanja Fidler**
Office	DH-3090
Office hours	Monday, 11am – 12pm
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TAs

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Grading

Assignments	60% **of the grade**
	There will be **four** assignments, posted every two weeks, starting with the second week. Each assignment will be worth 15% 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 + Oral exam	30% (project) + **10%** (oral exam) of the grade
	Each student will be expected to complete a project. The grade will evaluate a project **report** and an **oral presentation**. In the oral presentation, each student will need to clearly present and be capable to defend his/her work, as well as answer class material questions (oral exam).

There will be **no** written exam.

Policy

Assignments	**Individually**
	The students should **not** discuss the assignments and should solve them **individually**.
Project	**Individually or in pairs**
	The project should be done **individually** or in **pairs**. If a project is done in a pair, each student should still hand in his/her own report and defend the project on his/her own. 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 11.59pm on the date they are due**. Anything from 1 minute 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. Everything you hand in to be marked, namely 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`.

Deadlines

The table provides the dates on which assignments will be posted and their due date. The list of available projects will be made available in March.

Term Work	Post Date	Due Date
Assignment 1	Jan 22	Jan 29
Assignment 2	Feb 5	Feb 12
Assignment 3	March 5	March 12
Assignment 4	March 19	March 26
Project Report		April 15
Project Presentation		TBD

All dates are for 2023. **Dates are approximate and will depend on the amount of the material that we cover in class.** The solutions to the assignments / project should be submitted **by 11.59pm on the date they are due**. Anything from 1 minute late to 24 hours will count as one late day.

Course Schedule

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

Topic
Intro
Linear filters, edges
Image features
Keypoint detection
Matching
3D geometry
Stereo, multi-view
Object recognition
Neural Networks
Object detection
Segmentation
Selected topic