

# CSC 420: Intro to Image Understanding

## *Information Sheet*

### Course Description

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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

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<i>Semester</i>	<b>Fall 2015</b>
<i>Location</i>	<b>TBA</b>
<i>Time</i>	<b>Tuesday and Thursday, 3pm-4pm</b>
<i>Webpage</i>	<a href="http://www.cs.utoronto.ca/~fidler/CSC420.html">http://www.cs.utoronto.ca/~fidler/CSC420.html</a>
<i>Online Classroom</i>	<a href="https://piazza.com/utoronto.ca/fall2015/csc420/home">https://piazza.com/utoronto.ca/fall2015/csc420/home</a> This class uses <i>piazza</i> . On this webpage, we will post announcements and assignments. The students will also be able to post questions / discussions in a forum style manner, either to their instructors or to their peers.
<i>Textbook</i>	<a href="http://szeliski.org/Book/">http://szeliski.org/Book/</a> 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.
<i>Lecture Notes</i>	Lecture notes and other required readings will be posted on the course website.

### Instructor

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<i>Name</i>	<b>Sanja Fidler</b>
<i>Office</i>	Rm 283B, Pratt Building
<i>Office hours</i>	Tuesdays, 1.30pm – 3pm, or by appointment
<i>Webpage</i>	<a href="http://www.cs.toronto.edu/~fidler/">http://www.cs.toronto.edu/~fidler/</a>
<i>E-mail</i>	<a href="mailto:fidler@cs.toronto.edu">fidler@cs.toronto.edu</a>

### TAs

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To be announced

## Grading

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<i>Assignments</i>	<b>60% of the grade</b> There will be <b>five</b> 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.
<i>Project</i>	<b>40% of the grade</b> Each student will be expected to complete a project. The grade will evaluate a project <b>report</b> (25% of the grade) and an oral presentation (15% of the grade). In the oral presentation, each student will need to clearly present and be capable to defend his/her work.

There will be **no** exam.

## Policy

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<i>Assignments</i>	<b>Individually</b> The students should <b>not</b> discuss the assignments and should solve them <b>individually</b> .
<i>Project</i>	<b>Individually or in pairs</b> The project should be done <b>individually</b> or in <b>pairs</b> . 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.
<i>Deadline</i>	The solutions to the assignments should be submitted <b>by 11.59pm on the date they are due</b> . Anything from 1 minute late to 24 hours will count as one late day.
<i>Lateness</i>	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.
<i>Plagiarism</i>	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: <a href="http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize">http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize</a> .

## Deadlines

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The table provides the 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
Assignment 1	Sept 22	Sept 29
Assignment 2	Oct 6	Oct 13
Assignment 3	Oct 20	Oct 27
Assignment 4	Nov 3	Nov 10
Assignment 5	Nov 17	Nov 24
Project Report		Dec 5
Project Presentation		Dec 8

All dates are for 2015. 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

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

Week nb.	Date	Topic
1	Sept 15 & Sept 17	Intro
2	Sept 22 & Sept 24	Linear filters, edges
3	Sept 29 & Oct 1	Image features
4	Oct 6 & Oct 8	Keypoint detection
5	Oct 13 & Oct 15	Matching
6	Oct 20 & Oct 22	Segmentation
7	Oct 27 & Oct 29	Grouping
8	Nov 3 & Nov 5	Object recognition
9	? & Nov 12	Object detection
10	Nov 17 & Nov 19	Object detection, Neural Networks
11	Nov 24 & Nov 26	Stereo, multi-view
12	Dec 1 & Dec 3	Recognition in 3D
13	Dec 8 & Dec 9	Project Presentations