

COURSE OUTLINE

ECE 471 – Computer Vision

Term – SPRING 2020 (202001)

Instructor

Amanda Dash
Phone: 250-721-8989 ext: 2759
E-mail: adash42@uvic.ca

Office Hours

Days: Friday
Time: 13:00-15:00
Location: EOW 353

Course Objectives

- To provide students with the basic skills needed to analyze, formalize, and solve Computer Vision problems. Students will learn traditional computer vision methods that are mature, and also develop a high-level understanding of how deep learning works from a fundamental computer vision perspective.

Learning Outcomes

- The course aims to provide students with the opportunity to research and implement a computer vision-based project through guided assignments, in addition to the standard midterm and final assessments, so that students:
 - o Understand when to use traditional computer vision methods versus deep learning;
 - o Learn how to integrate the two methodologies to solve specific problems;
 - o Understand how deep learning models have evolved from a generalization of traditional computer methods;
 - o Have a working knowledge of computer vision and Python or Matlab

Syllabus

- The course will consist of a project proposal, midterm, final exam and 4 assignments that are designed to guide students through implementing a computer vision-based project in a group. The semester will conclude with an oral presentation and a final exam. General topics to be covered -- image processing; feature extraction; clustering and segmentation; convolutional neural networks; object detection and classification.

A-Section(s): A01 / CRN 20933

Days: Monday and Thursday

Time: 10:00 – 11:20 am

Location: DSB C130

Optional Textbook

Title: Computer Vision: Algorithms and Applications

Author: R. Szeliski

Publisher: Springer

Year: 2010

References: Additional mandatory readings will be posted regularly on the course web site.

Assessment:

Assignments:	35%	Due Dates: Week 4, Week 7, Week 10, Week 13
Mid-term	15%	Date: Feb 27
Term Project	20%	Due Dates: TBD

Final Exam 30%

Note:

There will be **four assignments**: first assignment is worth 5% of the final mark and the rest are worth 10% of the final mark. Assignments will contain material related to the term projects.
The **group term project** will have **three deliverables**: a proposal report, project code, and one oral presentation.
Failure to pass the final exam will result in a failing grade for the course.
Failure to pass the cumulative mark of assignments will result in a failing grade for the course

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.

<https://web.uvic.ca/calendar2020-01/undergrad/info/regulations/grading.html>

There will be no supplemental examination for this course.

Note to students:

Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair's Assistant to set up an appointment.

Course Withdrawal Deadlines:

- January 19: Withdrawal with 100% reduction of tuition fees
- February 9: Withdrawal with 50% reduction of tuition fees
- February 29: Last day for withdrawal (no fees returned)

Accommodation of Religious Observance:

<https://web.uvic.ca/calendar2020-01/undergrad/info/regulations/religious-observanc.html>

Policy on Inclusivity and Diversity:

<https://web.uvic.ca/calendar2020-01/general/policies.html>

Standards of Professional Behaviour:

You are advised to read the Faculty of Engineering document Standards for Professional Behaviour, which contains important information regarding conduct in courses, labs, and in the general use of facilities.

<https://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf>

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the entry in the current Undergraduate Calendar for the UVic policy on academic integrity. <https://web.uvic.ca/calendar2020-01/undergrad/info/regulations/academic-integrity.html>

Equality:

This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum, and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging an appropriate accommodation. Alternatively, you may want to contact the Centre for Accessible Learning located in the Campus Services Building. <https://www.uvic.ca/services/cal/>. The

University of Victoria is committed to promoting, providing, and protecting a positive, supportive, and safe learning and working environment for all its members.

Course Lecture Notes:

Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.

Sexualized Violence Prevention and Response at Uvic:

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting www.uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out:

Where: Sexualized violence resource office in EQHR; Sedgewick C119

Phone: 250.721.8021

Email: svpcoordinator@uvic.ca

Web: www.uvic.ca/svp

Office of the Ombudsperson:

The [Office of the Ombudsperson](https://uvicombudsperson.ca/) is an independent and impartial resource to assist with the fair resolution of student issues. A confidential consultation can help you understand your rights and responsibilities. The Ombudsperson can also clarify information, help navigate procedures, assist with problem-solving, facilitate communication, provide feedback on an appeal, investigate and make recommendations. Phone: 250-721-8357; Email: ombuddy@uvic.ca; Web: <https://uvicombudsperson.ca/>