

Course Project

Computer Vision (CSCI 4220U)

Faisal Z. Qureshi

<http://vclab.science.ontariotechu.ca>



Course project

- ▶ Project selection by March 3
- ▶ Project topics presentations, March 7
- ▶ Project report due by April 6, 11:59 pm

Project selection

- ▶ Submit a one page abstract that describes the project
 - ▶ Project title
 - ▶ Student names (maximum up to two students)
 - ▶ A paragraph or two that introduce the project

Project team

- ▶ Maximum up to two students

Possible topics

- ▶ Extend lab 4 or 5
- ▶ Object detection, segmentation and tracking
- ▶ Scene analysis, action and activity analysis
- ▶ Implement and evaluate a recent computer vision paper
 - ▶ Check out computer vision conferences, such as CVPR, ICCV, etc.
- ▶ Applications of vision in anomaly detection, sports analytics, retail, medical imaging, etc.
- ▶ Pitch me your idea

Topics presentation

- ▶ I may ask you to give a brief 2 minutes pitch for your project
- ▶ It is useful since it allows your classmates to see what you plan to do
 - ▶ Creates opportunities for collaboration

Project report (due by April 6)

- ▶ For your final project write-up you must use the VCLab course project template available at Overleaf.
- ▶ Project report is expected to be between 4 to 8 pages.
- ▶ Possible sections
 - ▶ Introduction
 - ▶ Related work
 - ▶ Methodology
 - ▶ Results
 - ▶ Discussion and Conclusions
 - ▶ Link to a code repo (private if needed)
- ▶ Additionally, you may submit a 3 minutes video for your project.

Grades

Project grade will depend on

- ▶ the ideas;
- ▶ how well you present them in the report;
- ▶ how well you position your work in the related literature;
- ▶ how thorough are your experiments; and
- ▶ how thoughtful are your conclusions.

Project selection

- ▶ We need to finalize the course project by Mar 3 to allow us enough time to complete the project. Recall that you only have five weeks to complete the project.
- ▶ Given the short timeline, it is important that the scope of the project is narrow, i.e., you need to be able to do it within the time-frame, given your other commitments.
- ▶ A small, narrowly focused project is better than a project that is incoherent but spans a much larger scope.

Project selection—extending labs

- ▶ One way to select a project is to pick a lab and extend it. There are many possibilities.
- ▶ You can, for example, evaluate your model on a different dataset or implement a different scheme for the same task and compare the two approaches on a single benchmark. Say, you want to tackle stop sign detection, you can, with some effort, extend this model to detect other road signs (by necessity, I do not expect you to classify all the signs.). Or you can use an OCR library and use it to read street names.

Project selection—ML for CV

- ▶ Those who are comfortable with ML and have some experience with PyTorch, TensorFlow or Keras can aim to extend the last two labs. You can, for example, compare YOLO with some other object detection scheme or compare ResNet with, say, VGG16.
- ▶ Still others who are passionate about CV can pick a recent paper from (check paperswithcode.com) and try to reproduce its results—download the code, download the dataset, evaluate the code on this dataset, time-permitting, try to improve upon the results in the paper.

Why do we have a project?

- ▶ The purpose of the course project is to allow you to design a boutique assignment that suits your interests and goals.

Last word

- ▶ Most importantly, enjoy this opportunity.

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