

Intro to Computer Vision: Syllabus

January 12, 2020 / 7:30 PM - 8:30PM EST

Important Links

[Workshop Hackpack](#)

Pre-workshop checklist, and resources to explore during and after the workshop.

[Hack the North 2020++ Event Schedule](#)

Check this out to stay up-to-date on activities, workshops, and other key happenings this weekend.

Motivator

Ever wonder how a computer “sees”? How are we confident self driving cars have an accurate understanding of the real world? How do we generate panoramas? Learn some basic concepts in computer vision, how the field has progressed, and how to use the emerging technologies. Learn how to apply an existing object detection model, Detectron2, to your hackathon project.

Prerequisite Knowledge

To get the most out of this workshop, knowledge in Python and Jupyter Notebook/Google Colab is helpful but optional

Learning Outcomes

This is what you will walk away from the workshop able to do:

- Understand basic computer vision motivations
- Understand traditional versus deep learning computer vision approaches
- Apply existing object detection technologies to a hackathon project

We will NOT

- Design and train a neural network or machine learning model
 - This takes too much time for a hackathon, let alone a workshop!
- Implement traditional solutions to cv problems

Timeline (1 hour)

Time	Module	Description
5 min.	What is computer vision?	How do we see? What do computers see?
5 min.	Computer Vision Problems	Filtering, panoramas, structure-from-motion, stereo & disparity, segmentation
5 min.	Traditional Solutions	M a t h. Reliable real world geometry is your best friend.
5 min.	Deep Learning Solutions	What is a machine learning model? Loss functions, improvements on deterministic problems, classification, generative art.
15 min.	Detectron2 Example	Briefly discuss jupyter notebook, CoLab. Go through detectron2 CoLab example.
5 min.	How do I put it all together?	Ways to integrate Detectron2 or other models into a hackathon project
2 min.	Further Reading	Going over more resources in hacker pack
10 min.	Q&A	