

# CPSC 330 Lecture 24: Deployment and conclusion

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# Announcements

- Last lecture today 🎉!
- HW9 is due today Dec 5th at 11:59 PM (No late submission allowed.)
- Ethics bonus assignment is due tomorrow at 11:59pm.

# ? ? Questions for you

Imagine you've created a machine learning model and are eager to share it with others. Consider the following scenarios for sharing your model:

- **To a non-technical Audience:** How would you present your model to friends and family who may not have a technical background?
- **To a technical audience:** How would you share your model with peers or professionals in the field who have a technical understanding of machine learning?
- **In an academic or research setting:** How would you disseminate your model within academic or research communities?

# Try out this moment predictor

<https://cpsc330-moment-predictor.onrender.com/>

- In this lecture, I will show you how to set up/develop this.

# What is deployment?

- After we train a model, we want to use it!
- The user likely does not want to install your Python stack, train your model.
- You don't necessarily want to share their dataset.
- So we need to do two things:
  1. Save/store your model for later use.
  2. Make the saved model conveniently accessible.

# We will use the tools below for

- Saving the model: We will use [Joblib](#)
- Making the saved model conveniently accessible: [Flask](#) & [render](#)

# Class Demo

Clone your repo here



# Web App

# API

# Course evaluations (~10 mins)

[https://canvas.ubc.ca/courses/149122/external\\_tools/53187](https://canvas.ubc.ca/courses/149122/external_tools/53187)

- They help us improve our teaching!
- UBC & CS uses them to provide rewards to instructors and TAs who are doing well!
- UBC & CS uses them to identify where instructors, TAs and courses need additional supports to improve.
- UBC uses these in evaluating professors for tenure and promotion.
- I'll very much appreciate your constructive and concrete feedback.

# What did we cover

- Part 1: Supervised learning on tabular data: ML fundamentals, preprocessing and data encoding, a bunch of models, evaluation metrics, feature importances and model transparency, feature selection, hyperparameter optimization
- Part 2: Dealing with other non-tabular data types: Clustering, recommender systems, computer vision with pre-trained deep learning models (high level), language data, text preprocessing, embeddings, topic modeling, time series, right-censored data / survival analysis
- Part 3: Communication, Ethics, and Deployment

# What we didn't cover

- How do these models work under the hood 

# What would I do differently?

Lots of room for improvement. Here are some things on my mind.

- Balance the pace of the course a bit more (too intense at the beginning, too relaxed at the end!)
- Flipped classroom in a more effective way in the first part of the course.
- More demos during lecture time
- Worksheets/practice questions during tutorials
- Add a course project !?!
- Add more interactive components in the lectures
- Some material to cover: dealing with outliers, data collection, large language models

# What next?

If you want to further develop your machine learning skills: - Practice! - Work on your own projects - Work hard and be consistent.

- If you are interested in research in machine learning
  - Take CPSC 340. If you do not have the required prereqs you can try to audit it.
- Get into the habit of reading papers and replicating results

# ? ? Questions for you

For each of the scenarios below

- Identify if ML is a good solution for a problem.
- If yes
  - Frame the problem to a ML problem.
  - Discuss what kind of features you would need to effectively solve the problem
  - What would be a reasonable baseline?
  - Which model would be a suitable model for the given scenario?
  - What would be the appropriate success metrics.



# ? ? Questions for you

App	Goal
QueuePredictor app	Inform callers how long they'll wait on hold given the current call volume
To-doList App	Keep track of the tasks that a user inputs and organize them by date
SegmentSphere App	To segment customers to tailor marketing strategies based on purchasing behavior
Video app	Recommend useful videos
Dining app	Identify cuisine by a restaurant's menu
Weather app	Calculate precipitation in six hour increments for a geographic region
EvoCarShare app	Calculate number of car rentals in four increments at a particular Evo parking spot
Pharma app	Understand the effect of a new drug on patient survival time

# Conclusion & farewell

That's all, folks. We made it! Good luck on your final exam! When you get a chance, please let me know what worked for you and what didn't work for you in this course.



