Discussion 2

Note: *Your TA will probably not cover all the problems on this worksheet. The discussion worksheets are not designed to be finished within an hour. They are deliberately made slightly longer so they can serve as resources you can use to practice, reinforce, and build upon concepts discussed in lectures, discussions, and homework.*

1 Machine Learning Taxonomy

In this problem, we explore where current ML techniques fit into the Machine Learning Taxonomy introduced in Lecture 3.

(a) **Classical ML:** Below is a list of more "classical" machine learning solutions that are still be used for automated decision making today:

- PayPal Fraud Protection learns to recognize common fraud patterns to detect fraud.
- Amazon's SageMaker groups customers for targeted marketing and recommendations.
- Zillow Zestimate estimates the market value for homes based on on-sale home prices.
- UCLA Health's Epic model identifies the risk of patients for preventable hospital visits.

For each of these examples, decide where in our machine learning taxonomy the approach best fits. Briefly explain your reasoning for each.

(b) **Modern ML:** Below is a list of more "modern" machine learning solutions:

- Boston Dynamics Atlas does parkour and other neat tricks.
- ChatGPT helps you ~~do your homework~~ learn ML.
- Telsa's RoboTaxi drives itself home.
- GameNGen simulates popular video games.

For each of these examples, decide whether the content primarily falls under **supervised learning**, **unsupervised learning**, or **reinforcement learning**, and mention if it uses **self-supervised learning**. Briefly explain your reasoning for each.