Chapter 4 Pt. 1

Fundamentals of Machine Learning

Questions

1)		orkflow/blueprint of machine learning. Write the correct step. (4 points)					
Step Step Step Step Step	1 2 3 4 5 6 7	 a) Deciding on an evaluation protocol b) Defining the problem and assembling a dataset c) Developing a model that does better than a baseline d) Choosing a measure of success e) Preparing your Data f) Regularizing your model and tuning your hyperparameters g) Scaling up: developing a model that overfits 					
2) Speech recognition, language translation, optical character recognition, and image classification are all examples of what type of machine learning? (1 point)							
	a. Unsupervised learningb. Supervised learningc. Self-supervised learningd. Reinforcement learning						
3)		arning consists of finding interesting transformations ta without the help of any (1 point)					
	a. Inputsb. Outputsc. Targetsd. Loss func	tion					
4) Unsupervised learning is useful for what? (1 point)							
.	a. Data visu b. Data comp c. Data deno d. All the a e. None	ression ising bove					
5)	_	cion, syntax tree prediction, object detection, and ion are all examples of what type of machine learning?					

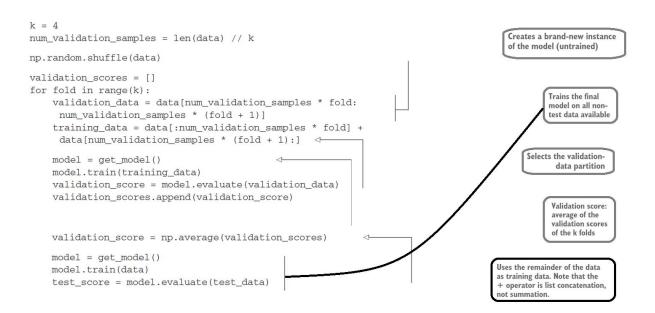
b. Supervised					
c. Self-superv d. Reinforceme		_			
u. Keimorceille	IIC 1ea	ıı.ıııng			
6) Match the following	ng. (1	point)			
Unsupervised learning			a)	Classification Regression	
Supervised	ng	b) Dimensionality reduction Clustering			
7) Match the terms an	nd def	initions. (6 p	oints	s)	
Sample or input	a)	A task where t	he ta	rget is a set of continuous val	ues.
Prediction or	b)			sk where each input sample shou	ld be
output	c)			re than two categories. les (typically between 8 and 12	8)
Target	c)			simultaneously by the model. Th	
Prediction error or loss				s often a power of 2, to facili	
value		memory allocat	ion o	n GPU.	
Classes	d)			of a class annotation in a	
 Label		classification			
Ground-truth or	e)			sk where each input sample can	
annotations		image is usual		abels. The number of labels per	
Binary	£)			r model should ideally have	
classification	' /			g to an external source of data	١.
Multiclass	g)			ataset, typically collected by	•
classification	0,	humans.		, , ,	
Multilabel	h)	A set of possi	ble la	abels to choose from in a	
classification		classification			
Scalar	i)	What comes out	of y	our model.	
regression Vector	j)	One data point	that	goes into your model.	
regression	k)	A task where t	he tai	rget is a continuous scalar val	ue.
Mini-batch or				sk where each input sample shou	
batch	-7			o exclusive categories.	
	m)			stance between your model's	
	,	prediction and	the t	target.	

a. Unsupervised learning

Evaluating machine-learning models

- 8) In machine learning, the goal is to... (1 point)
 - a. Achieve models that generalize
 - b. Optimize performance on the training data
 - c. Strictly follow the machine learning guidelines
 - d. Measure the difference between outputs and inputs
- 9) What data sets should you have? (1 point)
 - a. Training and test sets
 - b. Training and validation sets
 - c. Training, validation, and test sets
 - d. Validation and test sets
- 10) What is the difference between hyperparameters and parameters?
 (1 point)
 - a. Hyperparameters are the weights and parameters are the number of layers.
 - b. Hyperparameters are the weights and parameters are the number and size of layers.
 - c. Hyperparameters are the number and size of layers and parameters are the weights.
 - d. Hyperparameters are the number of layers and parameters are the size of layers.
- 11) Tuning the configuration of the model based on its performance on the validation set can cause what problem(s)? (1 point)
 - a. Underfitting
 - b. Overfitting
 - c. All the above
 - d. None
- 12) What are information leaks? (1 point)
 - a. Input data that is no longer being used in the model i.e. leaks
 - b. Tuning hyperparameters causes information from the validation data to leak into the model
 - c. Tuning hyperparameters causes information from the training data to leak into the model
 - d. Tuning hyperparameters causes information from the test data to leak into the model
- 13) What are the three types of evaluation methods? (1 point)
 - a. Simple hold-in validation, K-fold validation, and iterated K-fold validation with shuffling
 - b. Complex hold-in validation, K-fold validation, and iterated K-fold validation with shuffling

- c. Simple hold-out validation, K-fold validation, and randomized K-fold validation with shuffling
- d. Simple hold-out validation, K-fold validation, and iterated K-fold validation with shuffling
- 14) Write the type of validation method used in the code example below. (1 point). Connect the code descriptions to the most appropriate code arrow or line. One description has been completed for you. (2 points)



15) Write the type of validation method used in the code example below. (1 point). Connect the code descriptions to the most appropriate code arrow or line. (2 points)

