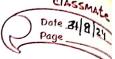
## Machine learning paradigms

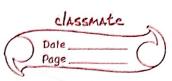


	Machine le	earning RE-INFORCEMENT
$\mathbb{A}$		SEMI-SUPERVISED
رمع	SUPERVISED	1 de la como de servicio
	· labelled data UNSUPE	RVISED 1
	· Direct feedback	Endo From
	· Prediction	1: 000
- 00		lattern & information.
*	Unsupervised learning  It is trained with intabel	lled data, only with
_>	It is trained with inclusion	
	110000	
	. The model tries to un	derstand the relation
	. The model tries to	godebálo V
	blu samples or the	(24) 25) 104
	· Forms clusters  · Model discovers and l	learns on its own, ie;
	· Model dis covers	to discover pattern and
	information.	- Adul 6 9 Lindolpa 8
$\parallel$	LX XX Crack Sign ( Crack Sign Cra	三方 五三 一大
$\parallel$		
$\perp \parallel$	(XX)	A
$\perp \parallel$		Let the best 2.
$\perp \!\!\! \perp$	out of 10 features, sel	ace con
Ш	W DIMENSIONALITY RED	OUCTION
$\parallel$		
		Pauler,
	1000 features -> high c	emputational power.
	1000 features -> high connenever dataset is un	
	whenever dataset is un UNSUPERVISED	labelled
	whenever dataset is un UNSUPERVISED  for a grouping of feature	rec vectors xi, it learn
	whenever dataset is un	rec vectors xi, it learn

	Commence of the production of the magnitude of
*	BEMI-SUPERVISED LEARNING
	Example of the second disconsists
1.	
	training set T = {x;}
	meabelled set U= & vij}
۵.	we first train of T and findf()
3.	act predictions: P=f(U) == 1 miles parper.
ч.	if Pi>a; is rectar and que : separa hompine
	we add (ui, f(ui)) to 7 11 masser 200
5.	Modified training set is retained
6.	Repeat till converges.
	Edition of the state of the sta
	1. take only labelled data (starts from small)
	find for connecting features with value y
	(we are finding decision boundary).
	2. nearest to which class
	update decision boundary for all samples.
	34 (Takes unas unlabelled data & classies)
	Angle constraints multiple samples
	Depending upon what > of data is labelled
	- like weak superwised
	entre supervised of the same and
*	
77	REINFORCEMENT LEARNING IND. EPOUR ENGLOYED
	(self-driving cars) => AGENT -> learning from its environment
	Mollar through trial & error.
	learns from sits mistake
	& repeats from beginning.
- 4	Pace / Collinson of the Collinson decreased
	Pass/fail instances For ex: ROBOTS
	CANTINUOUS LEARNING

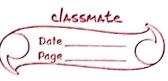
unsupervised -> unlabelled data, don't know classmate what to predict classmate
Obj: Find hidden Structures/relations Date
diff chusters.
The agent learns to take actions that maximize its
expected reward over-time.
(continuous actions
either penalty or reward)
Author to AND - mon D
Semi - supervised -> partially labelled data.
semi i un supervised + supervised.
Remforcement - 1. No dataset
only an agent who takes continuous
actions
· learns to behave in an environment
The state of the s
NOTE: Each model has its own set of parameters.
/ Arquiters.
(active this of
Learnable Parameters Hyperparameters
- Estimated from the training - Assigned by the
programmer during training
(relations) (INBUILT)
maded horas as any a series of
Ex: Decision Trees: Decide how many times a dec must
be taken.
Neveal networks: Yp layers - how many do we want?
classification: datapoint, looking at its neighbor.
now many neighbours we want?
Diff word tions
Diff word itions we give.
the form the burney is the state of the state of the
NOTE: learning para is modelled in parameter
the form the burney is the state of the state of the

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	1	The state of the s	Lough the second of the second	
			AL LAN DOLL	Page
			3 ways De	near model.
	1	- x +	y = wtx+ b	المدود المعادد
	*	+	Parameter: w, b	uridirus)
	•	Chroni	or to legitude as the	100
			@ Non-line ar	model
		And the way	NULLE LAY = a sin	(62)+b
, Long e	٠	2 + 1 2 2 2 3	parameter; O	1: a, \$, b
			Endob our to	
	2.30		3) Quadratic	
		*	zmidy = x Mx +	wtx + b
V. Emily	1	The contract of	of emparameter; A	
	ا	,		
	Par	ameters alw	ays learnt from &	raining Tou
			,	
	Fea	ature space		
2	- (T)	srow decision	bornday Donal	Larnas
التعامل	11	1 = 3/15/2A -	princelmear model)	Burning - Ectional
premised a	True ?	something of	first start with ro	m dom wsb
		4 5000		rdusti if
er C' an' e-	-		1s it able to	classify property?
J Edde	ceb.	F 23mm pro241	west bosa : 220x)	l by: Decision 1
			الحال الحرالالا	
- Jare	Hyp	er-parameter	21sper 9/ in marke	N Jonais II
	Hyper-parameter de value for a model to start traning.			
, 34	ا در شدا شا	It is a start train	who, wow	model !
	<u> </u>	- Payar	m a 1 a	
	. 4	ne model start	neter whose value 2 training.	is set before
7 3		It com's	4 SIE	Lance 11 a l
	The year	are data.	by fitting the r	rodel 6
Harry State of the Control of the Co			El Marie Lagrand	al ston
a series			20 A	



	Model hyperparameters.
	. # of neighbors KNN
	. # of layers CNN
	Mac pudat seas
	Optimization
	QUOTE: A Good Choice of Hyperparameters, can really
	make an algo shine.
	the second secon
-	Common Algo -> Grid Search
	-> Random Search Black 15 mil
	mind the second
	arid search (SVM algo & classif") Exhaustive search.
	ا طمحره تاؤم و والله الله المراه و والمالة
	-> Performs an exhaustive Search by evaluating any
	candidates Combination.
	Mac wall possible
	More hyperparameters, more values combinations of hyperparameters.
	High computational power
	Better alternative: random search.
	and a second to
	Random Search
- 1	is randomly picks a value, find a good/optimal value.
	is may miss optimum point.
	is Better in the case of huge to of sample hyperparametrs
	south of said the
	Next better: Bayesian Optimization: (Boised on past iterns)
	learning from each iterations
	# Arst picks randomly
	depends on previteration

	Page
	SUMMARY
	Training Data feature choose a  Validation Douta Extraction model
	Validation Douta Extraction model
	The transfer of the state of th
	Kyper param: Hi
Service Control	lest bath _ reaction _ param: n.
*,	Goal: Prediction
	compute accuracy Select His
	Using validation & learn about
	model/classifier/ data & Qi. from train
	Prediction.
180 mg 1	compute acci for etest a compute the top the
	data using di of the
,	pobest classifier. 10 x 2 2 x 2 2 confix on 2 months of
	in Candidates pathylanessing country about.
20	Data Quality
2 kg	Lower Species Burrowing any put arent to
_	The quality and quantity of training data is the
	most important aspect that decides the quality -
	of ML Solm.
	28-0x-000 Seaso
LV Erm	y = w, x, + w, x, + w, x,
	3 A CONTRACTOR OF THE CONTRACT
Le Prof.	bisadu: outliers
	missing values
1 1 A 3	limited quantity
	Control of the Contro
- 44	mwanted date => writer
	Tellowish vista or semanat



outliers betection. Bux plot
1. Median 25%
2. 75% population.
3. Inter Ovarkle
4. IQR
· outlier is an observation it; unlike the other
observation.
Caused by : measurement or i/p error
Data Corruption
True outlier observation.
May cause problem doing model fitting.
May Cars
noise: random behaviour, value scattered nondomly in
dataset
outlier: data follows trend, but some points do not.
BULGET . COSC ! !!