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Du a rdiffer ent virudow.  Di) A simple instance filter that allows no instances to spars through Methods in weeka filtere with for ameters of type Filter. It atic instances. Filter.  Jerameters of type Filter static instances. Filter.	0	classes atteibutes graphe are aruns
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use filter / Just ancer data, fixer / The / Thomas car	Tp.,	bareameters of type Filter- it att att 100 rances. 11200
		use tilles / trustances data, time fruit / 100000 car
entre let of miller more		entire set of instances through a filter and
vetuere the new sel.		return the new sel.
) Filtering panel is need to filter a dataret	2)	Filtering banel is need to filter a dataret.

- (3) Ihle ale two main typer of filters in Weka?

  a) Sukervised I Humbervised
- (4) In supervised leaving, the category /labels data is assigned to are known before computation. So, the labels, alreses of categories are being used in order to "leavi" the farameter that are really significant for those clusteer. In usurfernised, datasets are assigned to segments, with out the alusters being through.
  - I (9) Visualize famel lets you look at a dataset and select different attributes-frequently numeric notes-for the x and y-axes. Instances are rehown as faints, right different volors for different volaces. You can sweep out a rectangle and focus the dataset on the faints inside it you can also apply a classifier and visualize the errors it makes by flotting the "class" against the "field class".
  - Q:1 5) The risula visualize "fauel can be used to Aleo the rougher on matrix shows the number of instances of each whas fresent in the data.

		EXPERIME	NT -7 (PART	- a)	
Tack	1 F				
) The	e are 5 au	tte ibutes ?-	(image Q1:	ID3: bug)	
outl	cop tember	atreco hum	idity, winde	y, play.	
(1 4444	yd przercast.	uainy) /h	et, mild, cool	), (dugh	, normal)
( te	re, false), (	ves . Me)			
	7,4 3000 ()	Outloo	R		
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) id	outlook	temperature	V	False	play
1	survy	that	uh gh		NO
2	surry	Inot	lugh	Tene	no
3	overcast	hot	hegh	False	yes
4	vainy	mild	high	False	yes
5	nainy	icoOl	noem al	False	yes
6	<u> </u>	cool	normal	True	no
7	overcas t	cool	normal	True	yei
8	surry	mild	Ju gh	False	<u> </u>
9	sunny	cool	normal	Falce	yes
10	vainy	mild	normal	False	yu
	surry	mild	normal	Tine	Yes
12	overcast	mild	high	The	yes
	overcast	hot	noemal	Foll e	yes
13	rainy	mild	ehigh	Time	1

(3) Entropy of datout 
$$H(s) = \Xi - f(t) \log_3 f(t) = 0.94$$

First attribute 1 outlook (isumny, variey, overcast)

 $H(\text{outlook} = \lambda \text{ unny}) = -\frac{2}{5} \log_3 \left(\frac{2}{5}\right) - \frac{3}{5} \log_3 \left(\frac{3}{5}\right)$ 
 $= 0.5282 + 0.4422$ 
 $= 0.971$ 
 $H(\text{outlook} = \text{variey}) = -\frac{3}{5} \log_3 \left(\frac{3}{5}\right) - \frac{2}{5} \log_3 \left(\frac{2}{5}\right)$ 
 $= 0.971$ 
 $H(\text{outlook} = \text{overcast}) = -\frac{4}{4} \log_3 \left(\frac{9}{4}\right) - \frac{2}{4} \log_3 \left(\frac{0}{4}\right)$ 
 $= 0$ 

Avg. entropy (eutlook) =  $\frac{5}{14} \times 0.971 + \frac{5}{14} \times 0.971 + \frac{4}{14} \times 0$ 
 $= 0.6936$ 

I Gr (outlook) =  $H(s) - \Xi f(t) H(t)$ 
 $= 0.94 - 0.6936$ 

Je coud attribute : temperature (shot, mild, cool)

 $H(\text{temp} = \text{mild}) = -\frac{2}{4} \log_3 \left(\frac{a}{4}\right) - \frac{2}{4} \log_3 \left(\frac{2}{4}\right) = 1$ 
 $H(\text{temp} = \text{mild}) = -\frac{4}{6} \log_2 \left(\frac{4}{6}\right) - \frac{2}{6} \log_2 \left(\frac{2}{6}\right)$ 
 $= 0.39 + 0.53 = 0.92$ 
 $H(\text{temp} \cdot \text{Cool}) = -\frac{3}{4} \log_3 \left(\frac{4}{4}\right) - \frac{4}{4} \log_3 \left(\frac{1}{4}\right)$ 
 $= 0.3113 + 0.5 = 0.8113$ 

I Gr (temp) =  $0.94 - \left(\frac{4}{15} \times 1 + \frac{6}{15} \times 0.92 + \frac{4}{15} \times 0.8113$ 

Thied attaibute: humidity ( high, normal)  H (humidity: high): - 3 log (3) - 4 log (4)  = 0.9852  H ( humidity: vormal) = -6 log (6) - 1 log (1)  = 0.5917  IG (humidity) = 0.94 - (7 × 0.98527 × 0.59)  = 0.153  Fourth attaibute: wind ( utrong, weak)  H (wind: strong): -3 log (3) - 3 log (3)  = 1  H (wind: weak): -6 log (6) - 3 log (3)  = 0.84  IG (wind): 0.94 - (6 × 1 + 9 × 0.84)  = 0.048	
H (humidity = luigh) = $-\frac{3}{7} log_{\frac{1}{7}}(\frac{3}{7}) = \frac{4}{7} log_{\frac{1}{7}}(\frac{7}{7})$ = $0.9852$ H (humidity = normal) = $-\frac{6}{7}log_{\frac{1}{7}}(\frac{6}{7}) = \frac{1}{7}log_{\frac{1}{7}}(\frac{1}{7})$ = $0.5917$ IG (humidity) = $0.94 - \left(\frac{7}{7} \times 0.98527 + 0.59\right)$ = $0.153$ Fourth altribute 6 wind (strong, weak)  H (wind = strong) = $-\frac{3}{8}log_{\frac{1}{8}}(\frac{3}{8}) = \frac{3}{8}log_{\frac{1}{8}}(\frac{3}{8})$ = $1$ H (wind = weak) = $-\frac{6}{6}log_{\frac{1}{8}}(\frac{6}{8}) = \frac{3}{8}log_{\frac{1}{8}}(\frac{3}{8})$ = $0.84$ IG (wind) = $0.94 - \left(\frac{6}{14} \times 1 + \frac{9}{14} \times 0.84\right)$	Thied atteibute: humidity (chigh, normal)
H ( Inumidity = normal) = -6 log (6) - 1 log (1)  = 0.5917  IG (humidity) = 0.94 - (7 × 0.985\$ 7 × 0.59  14 14  Fourth altribute to wind (strong, weak)  H (wind = strong) = -3 log (3) - 3 log (3)  5 8 8 8 8 8  = 1  H (wind = weak) = -6 log (6) - 3 log (3)  \$ 8 8 8 9 8  = 0.84  IG (wind) = 0.94 - (6 × 1 + 9 × 0.84)  14 14	H (humidity: lugh): - 3 log (3) - 4 log (4) 7
H ( Inumidity = normal) = -6 log (6) - 1 log (1)  = 0.5917  IG (humidity) = 0.94 - (7 × 0.985\$ 7 × 0.59  14 14  Fourth altribute to wind (strong, weak)  H (wind = strong) = -3 log (3) - 3 log (3)  5 8 8 8 8 8  = 1  H (wind = weak) = -6 log (6) - 3 log (3)  \$ 8 8 8 9 8  = 0.84  IG (wind) = 0.94 - (6 × 1 + 9 × 0.84)  14 14	= 0.9852
IG (humidity) = $0.94 - \left(\frac{7}{7} \times 0.985 \right) \frac{7}{7} \times 0.59$ = $0.153$ Fourth attribute 6: wind (strong, weak)  H (wind = strong) = $-\frac{3}{5}\log_2\left(\frac{3}{5}\right) - \frac{3}{5}\log_2\left(\frac{3}{5}\right)$ = $1$ H (wind = weak) = $-\frac{6}{5}\log_2\left(\frac{6}{3}\right) - \frac{3}{5}\log_2\left(\frac{3}{3}\right)$ = $0.84$ IG (wind) = $0.94 - \left(\frac{6}{5} \times 1 + \frac{9}{7} \times 0.84\right)$	
IG (humidity) = 0.94 - (7 × 0.985\$ 7 × 0.59)  = 0.153  Fourth altribute 5: wind (shong, weak)  H (wind = shong) = -3 log (3 / 8) = 3 log (3 / 8)  = 1  H (wind = weak) = -6 log (6 / 8) = 3 log (3 / 8)  = 0.84  IG (wind) = 0.94 - (6 × 1 + 9 × 0.84)  14	= 0.5917
Fourth attribute 6 wind (strong, weak)  H (wind = strong) = - 3 log (3) - 3 log (3)  = 1  H (wind = weak) = - 6 log (6) - 3 log (3)  = 0.84  IG (wind) = 0.94 - (6 1 + 9 x 0.84)  14	IG (humidity) = 0.94 - (7 × 0.985\$ 7 × 0.59)
H (wind = strong) = $-\frac{3}{5} \log_2\left(\frac{3}{8}\right)^2 - \frac{3}{5} \log_2\left(\frac{3}{8}\right)^2$ = 1  H (wind = week) = $-\frac{6}{5} \log_2\left(\frac{6}{8}\right) - \frac{3}{5} \log_2\left(\frac{3}{8}\right)^2$ = 0.84  IG (wind) = 0.94 - $\left(\frac{6}{14}\right)^2 + \frac{9}{14} = 0.84$	= 0 · 15 3
H (wind = strong) = $-\frac{3}{5} \log_2 \left(\frac{3}{8}\right)^2 - \frac{3}{5} \log_2 \left(\frac{3}{8}\right)$ = 1  H (wind = week) = $-\frac{6}{5} \log_2 \left(\frac{6}{8}\right) - \frac{3}{5} \log_2 \left(\frac{3}{8}\right)$ = 0.84  IG (wind) = 0.94 - $\left(\frac{6}{5}\right)^2 + \frac{9}{5} = 0.84$	
H (wind = strong) = $-\frac{3}{5} \log_2\left(\frac{3}{8}\right)^2 - \frac{3}{5} \log_2\left(\frac{3}{8}\right)^2$ = 1  H (wind = week) = $-\frac{6}{5} \log_2\left(\frac{6}{8}\right) - \frac{3}{5} \log_2\left(\frac{3}{8}\right)^2$ = 0.84  IG (wind) = 0.94 - $\left(\frac{6}{14}\right)^2 + \frac{9}{14} = 0.84$	Fourth attichute & wind (showe, weak)
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$= 0.84$ $IG(wind) = 0.94 - \left(\frac{6}{14} + \frac{9}{14} + \frac{0.84}{14}\right)$	= 1
IG (wind) = 0.94 - (6 x 1 + 9 x 0.84)	H (wird = weak) = - 6 log (6) - 3 log (3)
(14 14	= 0.84
· · · · · · · · · · · · · · · · · · ·	

1 Confusion Matrix Class 2 Class 1 Yes No = Claus TP FM Yes 5 4 Class 2 FP TN No 3 2 Confusion matiix gives the accuracy, Recale, brecision, and F-measure. 3) Cohenis Kappa estatistic measures internates orchiability Internates orchiability Internates reliability, or frecis, on, haffens when your data naters give the same some to the same data item. This istatistic ishould only be calculated when & The nater each vate one trial on each sample of O Que nater nates two trials on each sample. In addition, Cohen's Kaffa whas the assumption that the waters are deliberately chosen. If your rater use chosen at uandon from a population of vaters, use Fleiss' Kappa unstead. The Kappa etatistic varies from 0 to 1, where (1) 0 = agreement equivalent to chance @ 0.1 = 0.20 = islight agree ment 3 0.21 - 0.40 = fair agreement @ 0.41-0.60 = moderate agreement 6 0.61-0.80 = unkstantial agreement 6 0-81-0.99 = near flufoct agreement 1 : fufect agreement (4) Thate > you predicted positive and it's true you predicted b) Fluate > You predicted positive and it's false. c) breasion = breasion = TP TP+FP

out of all +ve iclauses we have predicted correctly, how many

are actually for ther.

140	
Charles and the second	d) Recall => Recall = TP
Section and section is	TP+FN
	Out of all the +re classes, how much we fredicted icorrectly.
	It ishould be high as fossible
E	O Ihue are 10 attributer in the dataret- (image \$5-pmg)
	Dhe attibutes are 6-
	RI, Na, Mg, Al, Si, K, Ca, Ba, Fe, Type
	3) Clauses ayour instances
	build mind float 70
	build wind non-float 76
	vehic wind fleat 17
	rehic wind non-float 0
	containere 13
	tableware 9
	headlamps 29
	1 The "vienalize" panel where the "type" whas has
	a clear refresentation of volor assigned to each class
	build wird float - blue
	build wind non-float ned
	rehic wind float light blue
A COLUMN TO SERVICE ASSESSMENT	rehic wind non-float no rolow
	containers chink
	table ware gran
	headlange yellow
Lucia	

9:3 steps: (image 03 ther.pny)

O Rhick on Weka Explorer

3 click on brefracessing tab button

O reick on open file button

15 Moose Weka folder in deive

10 delect and chick on data of choose weather aref data see and open file.

Tillick on classify tab button

1 Mick on Choose button and then de of down . weka - classifiers - rules - OneR and select it

1 Mick on start button

Q:60 Present on the image 18K. prg

@ beent in the image 1BK fing

18 K us a lazy classifier.

9:00 besent i've the i'mage 748 prog

@ beend i'm the i'mage J48 fing

1 748 us a itrees classifier

Q: 18K relacsifier is better.

9:00 herent for the images J48 fry and 18t. fry D becent in images J48 hold out fry, 18 K hold out fry The accuracy level is better in woes-validation strategy than holdout strategy with 3 % levels.

9:00 accent in image 010(1). fry ( lieut in image 8:0(2) 18t. forg, \$10(2) J48 forg The accuracy is better than the free one.

20 The impor	tant attributer are => Radius Ratio, l	( wing J48	classifier ous
rehicle aeff	=> Radius Ratio, L	the unto el	ong at e dress,
	la axia rectango	Maity, scaled	Valiable (=)
	scaled variance	minor whell	surg was the
	skewnes about	minor knedy	sis about may
kn- v8 - kp.o	uff => V3, V10, V19	5, V16, V21, V	132, \ 33
100 =	SOF NI- Un AP K	Ra Fe	
glass. en gr	> RI, Na, Hg, Al, K	, (a, wa, 1	
11			
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