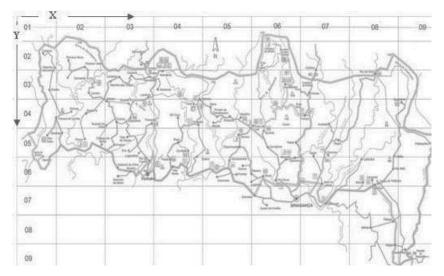
FOREST FRIES PREDICTION

YU LIPENG



FEATURE DESCRIPTION

- 1. X x-axis spatial coordinate within the Montesinho park map: 1 to 9
- 2.Y y-axis spatial coordinate within the Montesinho park map: 2 to 9
- 3. month month of the year: "jan" to "dec"
- 4. day day of the week: "mon" to "sun"
- 5. FFMC FFMC index from the FWI system: 18.7 to 96.20
- 6. DMC DMC index from the FWI system: 1.1 to 291.3
- 7. DC DC index from the FWI system: 7.9 to 860.6
- 8. ISI ISI index from the FWI system: 0.0 to 56.10
- 9. temp temperature in Celsius degrees: 2.2 to 33.30
- 10. RH relative humidity in %: 15.0 to 100
- 11. wind wind speed in km/h: 0.40 to 9.40
- 12. rain outside rain in mm/m2 : 0.0 to 6.4
- 13. area the burned area of the forest (in ha): 0.00 to 1090.84





DATA DESCRIPTION

	X	Y	month	day	FFMC	DMC	DC	ISI	temp	RH	wind	rain	area
0	7	5	mar	fri	86.2	26.2	94.3	5.1	8.2	51	6.7	0.0	0.0
1	7	4	oct	tue	90.6	35.4	669.1	6.7	18.0	33	0.9	0.0	0.0
2	7	4	oct	sat	90.6	43.7	686.9	6.7	14.6	33	1.3	0.0	0.0
3	8	6	mar	fri	91.7	33.3	77.5	9.0	8.3	97	4.0	0.2	0.0
4	8	6	mar	sun	89.3	51.3	102.2	9.6	11.4	99	1.8	0.0	0.0



DATA DESCRIPTION

	X	Y	month	day	FFMC	DMC	DC	ISI	temp	RH	wind	rain	area
0	7	5	3	5	86.2	26.2	94.3	5.1	8.2	51	6.7	0.0	0.0
1	7	4	10	2	90.6	35.4	669.1	6.7	18.0	33	0.9	0.0	0.0
2	7	4	10	6	90.6	43.7	686.9	6.7	14.6	33	1.3	0.0	0.0
3	8	6	3	5	91.7	33.3	77.5	9.0	8.3	97	4.0	0.2	0.0
4	8	6	3	7	89.3	51.3	102.2	9.6	11.4	99	1.8	0.0	0.0



FIRES DENSITY

Average burnt areas on each coordinate

-	0.00	11.58	15.71	10.02	28.87	0.00	0.00	0.00	0.00
2	0.00	18.51	0.00	5.31	4.63	0.00	0.00	0.00	0.00
т	0.00	0.00	6.58	2.94	0.31	0.00	0.00	0.00	0.00
4	0.00	0.00	7.86	11.04	11.48	10.97	0.00	0.00	0.00
2	0.00	0.00	0.00	3.21	0.00	4.41	0.00	0.00	0.00
9	0.00	0.00	7.71	16.05	28.25	2.86	0.00	0.00	0.00
7	0.00	0.00	13.68	10.54	7.04	43.23	0.00	0.00	0.00
ω	0.00	0.00	8.77	12.18	0.73	24.33	0.00	185.76	0.00
6	0.00	0.00	0.00	46.40	4.08	42.87	0.00	0.00	0.75
	1	2	3	4	5	6	7	8	9

160

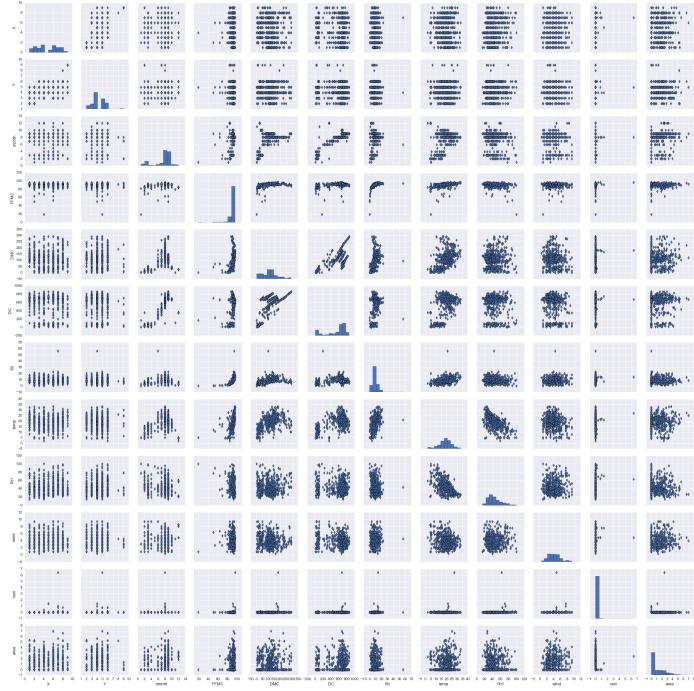
80

4



CORRELATION WATRIX

					C	orrelatio	on Matr	ix				
×	1.00	0.54	-0.07	-0.02	-0.05	-0.09	0.01	-0.05	0.09	0.02	0.07	0.06
>		1.00	-0.07	-0.05	0.01	-0.10	-0.02	-0.02	0.06	-0.02	0.03	0.04
month	-0.07	-0.07	1.00	0.29		0.87	0.19	0.37	-0.10	-0.09	0.01	0.11
FFMC	-0.02	-0.05	0.29	1.00	0.38	0.33	0.53	0.43	-0.30	-0.03	0.06	0.05
DMC	-0.05	0.01	0.47	0.38	1.00	0.68	0.31		0.07	-0.11	0.07	0.07
8	-0.09	-0.10	0.87	0.33	0.68	1.00	0.23		-0.04	-0.20	0.04	0.07
<u>S</u>	0.01	-0.02	0.19		0.31	0.23	1.00	0.39	-0.13	0.11	0.07	-0.01
temp	-0.05	-0.02	0.37	0.43			0.39	1.00	-0.53	-0.23	0.07	0.05
Æ	0.09	0.06	-0.10	-0.30	0.07	-0.04	-0.13	-0.53	1.00	0.07	0.10	-0.05
wind	0.02	-0.02	-0.09	-0.03	-0.11	-0.20	0.11	-0.23	0.07	1.00	0.06	0.07
rain	0.07	0.03	0.01	0.06	0.07	0.04	0.07	0.07	0.10	0.06	1.00	0.02
area	0.06	0.04	0.11	0.05	0.07	0.07	-0.01	0.05	-0.05	0.07	0.02	1.00
	Х	Υ	month	FFMC	DMC	DC	ISI	temp	RH	wind	rain	area

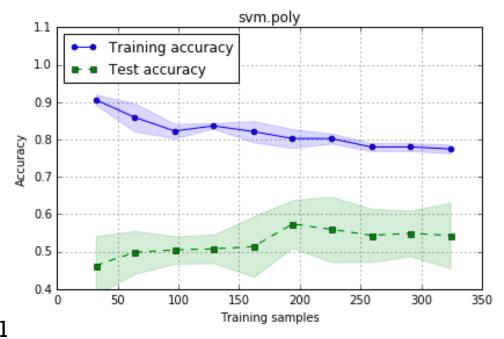




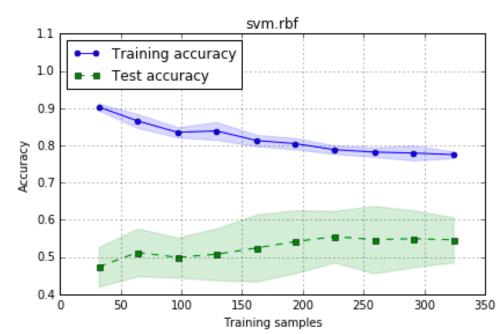
LOGISTIC REGRESSION & SYM

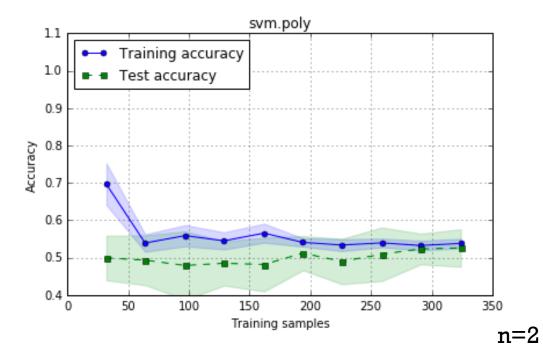
Method	Training accuracy(n=11)	Test accuracy(n=11)	Training accuracy(n=2)	Test accuracy(n=2)
logistic regression	0.548	0.558	0.543	0.551
svm.linear	0.593	0.545	0.537	0.487
svm.poly	0.776	0.577	0.546	0.564
svm.rbf	0.767	0.532	0.562	0.564
svm.sigmoid	0.449	0.494	0.496	0.551

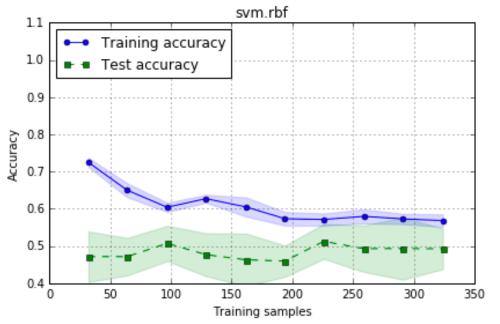






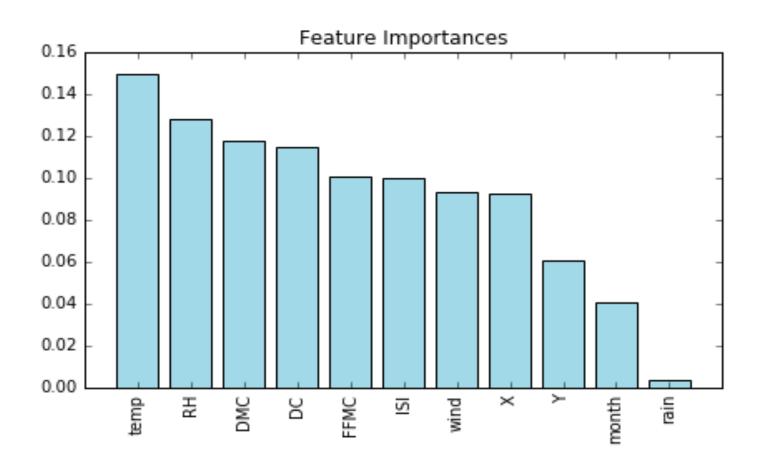








FEATURE IMPORTANCE



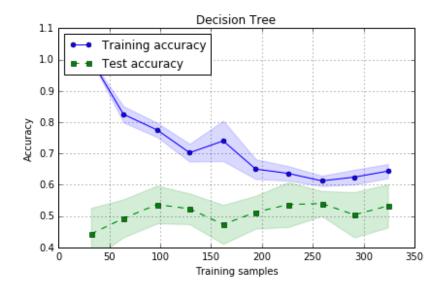
[0.14935722 0.1280545 0.11759765 0.11432912 0.10071045 0.10008146 0.09281338 0.09269931 0.06072502 0.04009978 0.00353211]

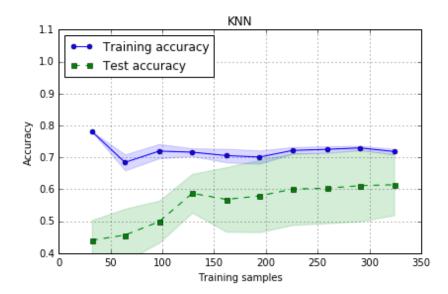


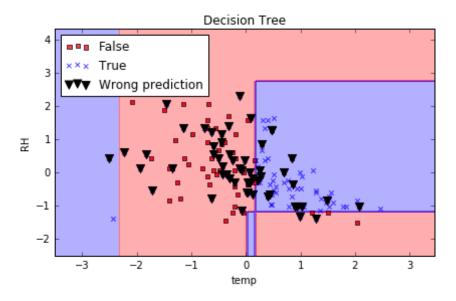
CLASSIFIER METHODS

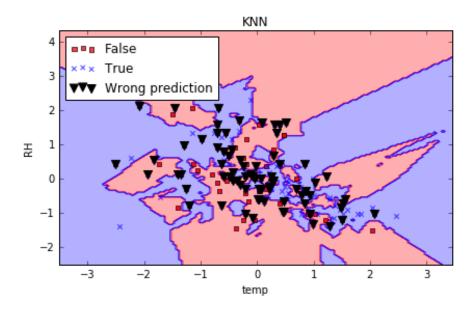
Method	Training accuracy	Test accuracy		
Decision Tree	0.607	0.635		
Random Forest	0.947	0.558		
KNN	0.665	0.506		
Extra Trees	0.704	0.564		
AdaBoost	0.889	0.500		
Gradient Boosting	0.958	0.538		
Bagging	0.507	0.526		
Navie Bayes	0.565	0.494		
Voting (Decision+Extra)	0.665	0.603		













THANKS FOR YOUR LISTENING AND ADVICE

