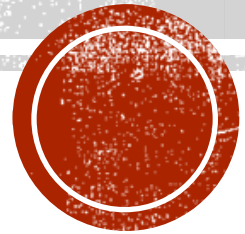
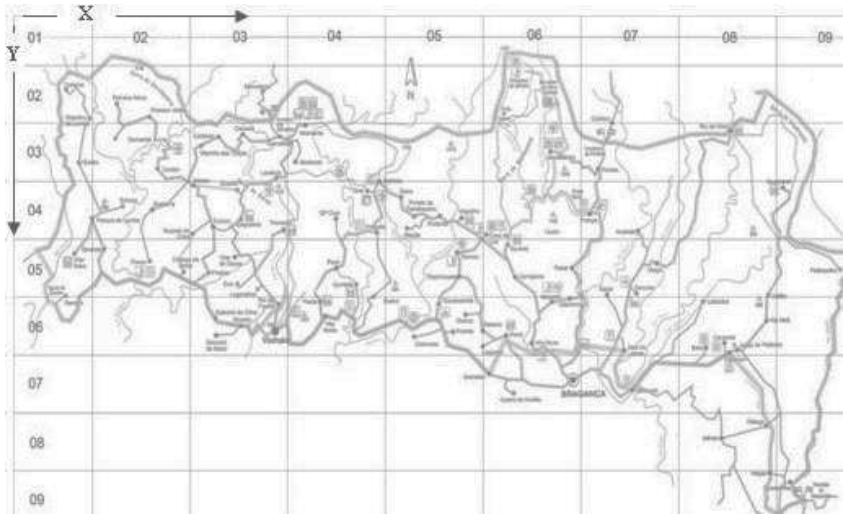
FOREST FRIES PREDICTION

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



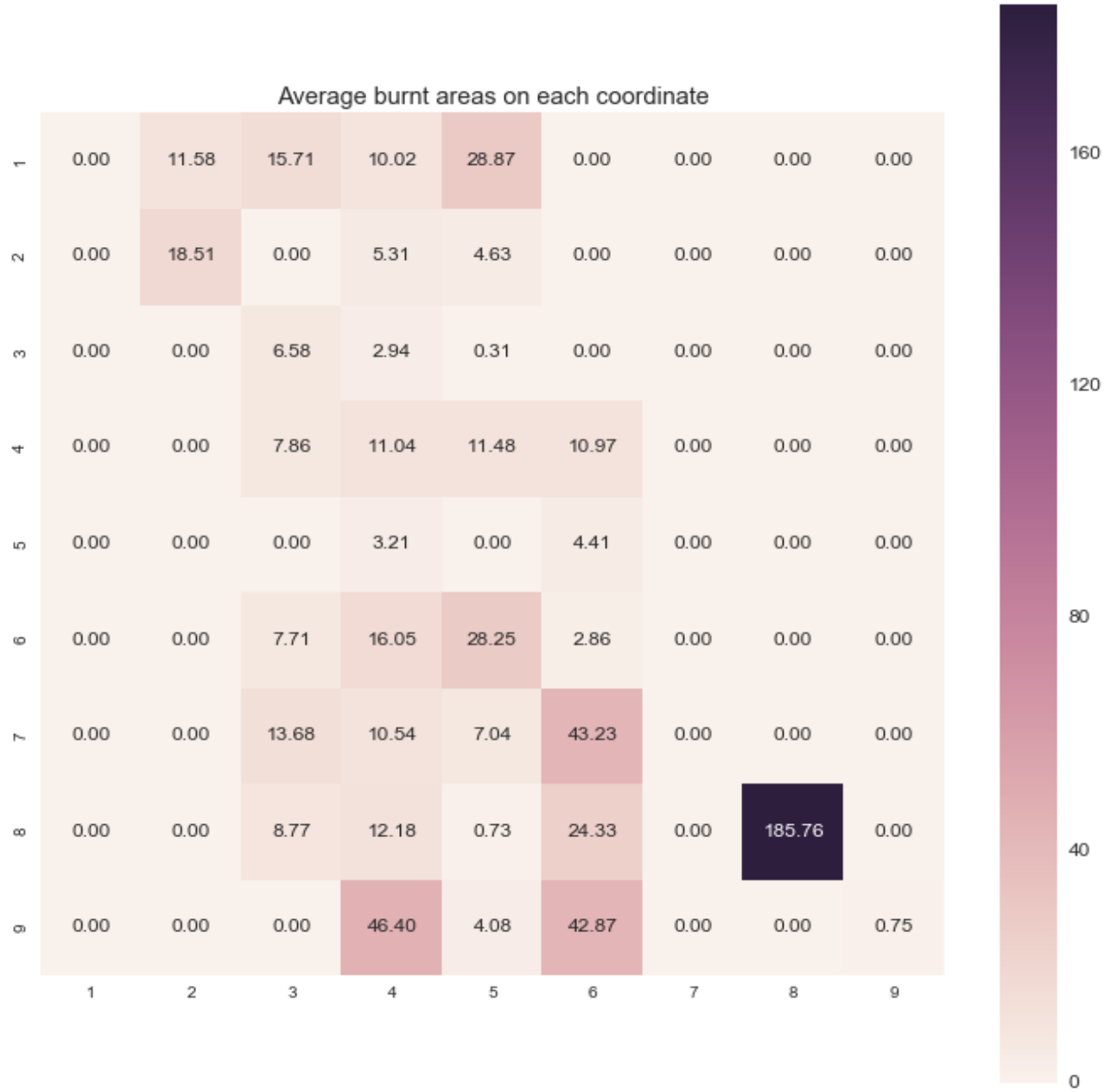
DATA DESCRIPTION

	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

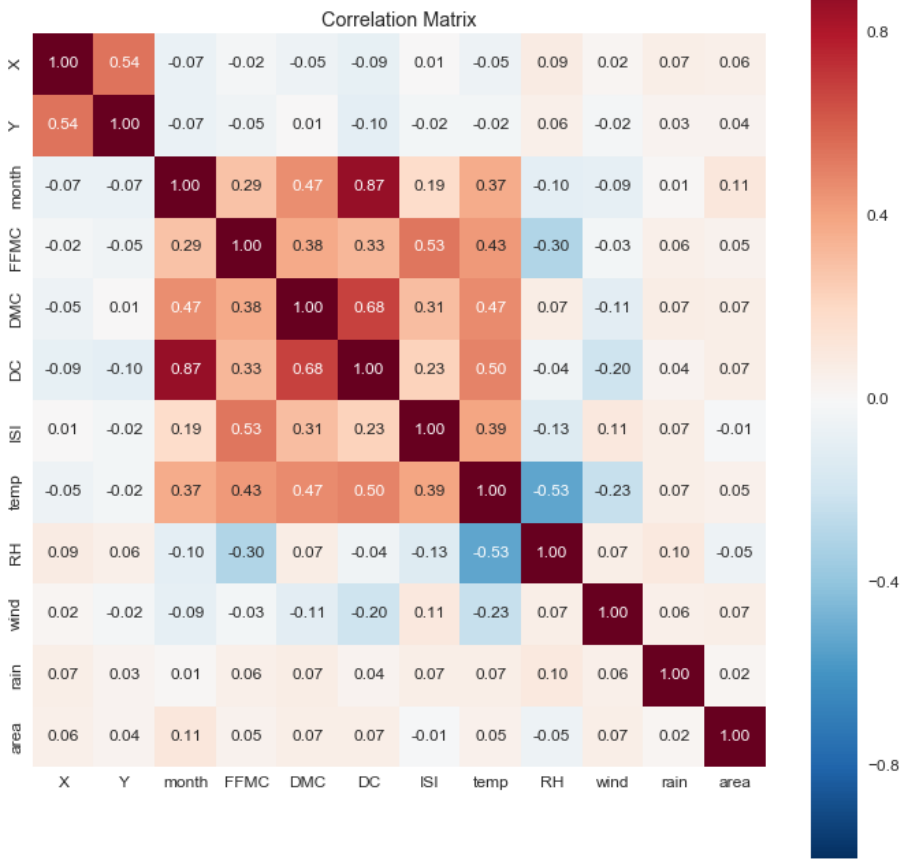
DATA DESCRIPTION

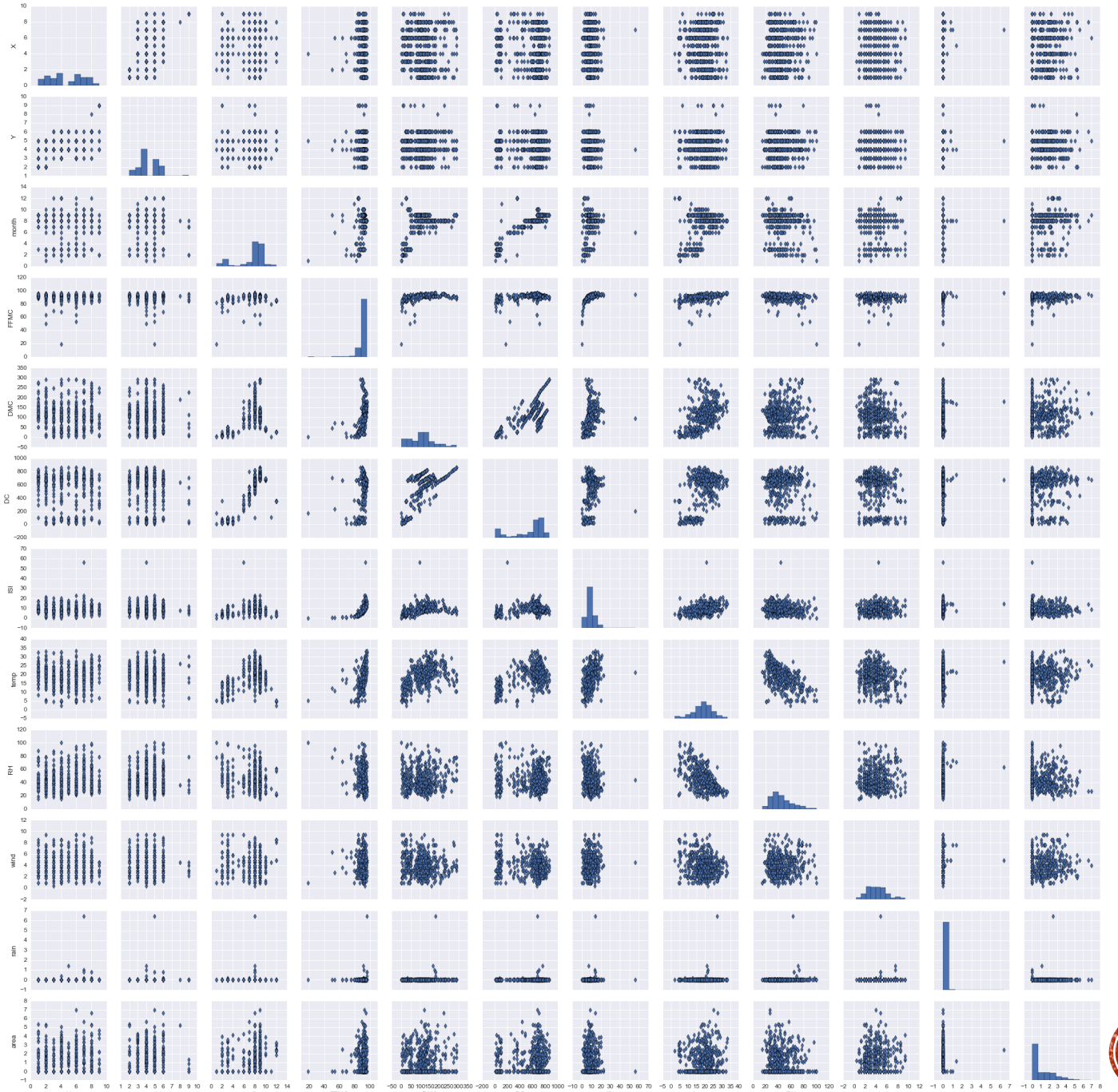
	X	Y	month	day	FFMC	DMC	DC	ISI	temp	RH	wind	rain	area
0	7	5	3	5	86.2	26.2	94.3	5.1	8.2	51	6.7	0.0	0.0
1	7	4	10	2	90.6	35.4	669.1	6.7	18.0	33	0.9	0.0	0.0
2	7	4	10	6	90.6	43.7	686.9	6.7	14.6	33	1.3	0.0	0.0
3	8	6	3	5	91.7	33.3	77.5	9.0	8.3	97	4.0	0.2	0.0
4	8	6	3	7	89.3	51.3	102.2	9.6	11.4	99	1.8	0.0	0.0

FIRES DENSITY



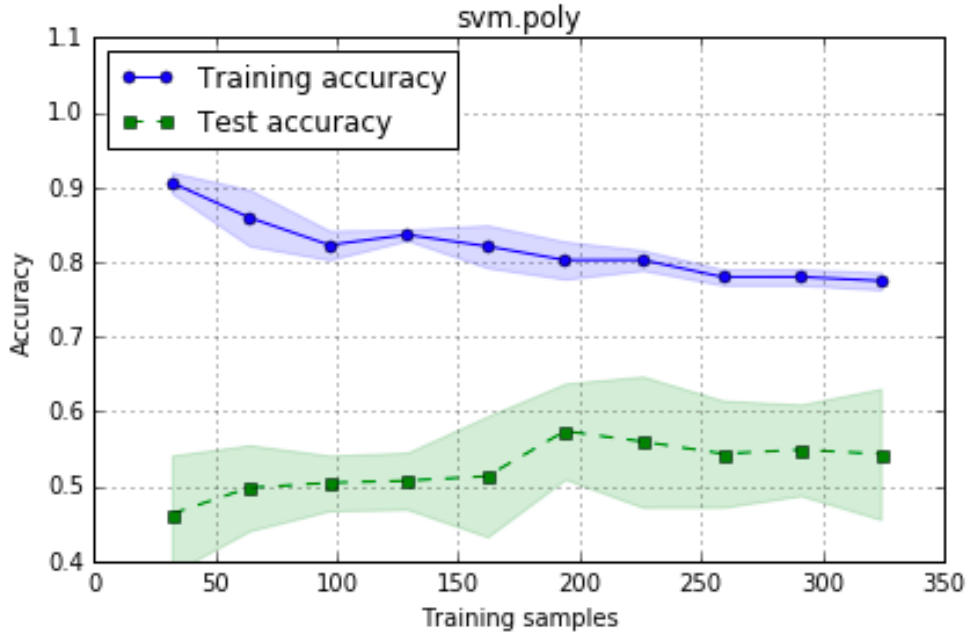
CORRELATION MATRIX



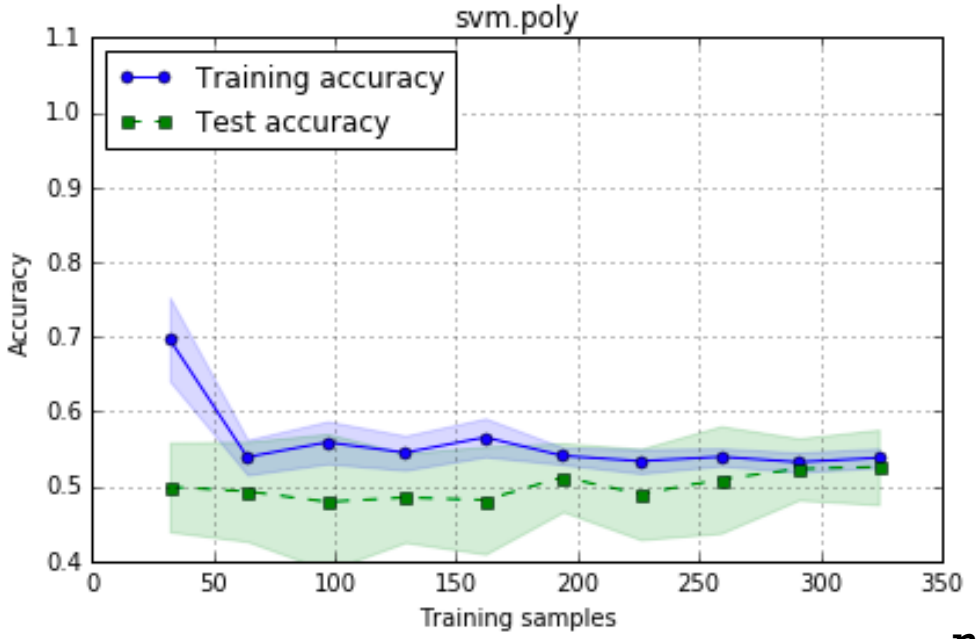


LOGISTIC REGRESSION & SVM

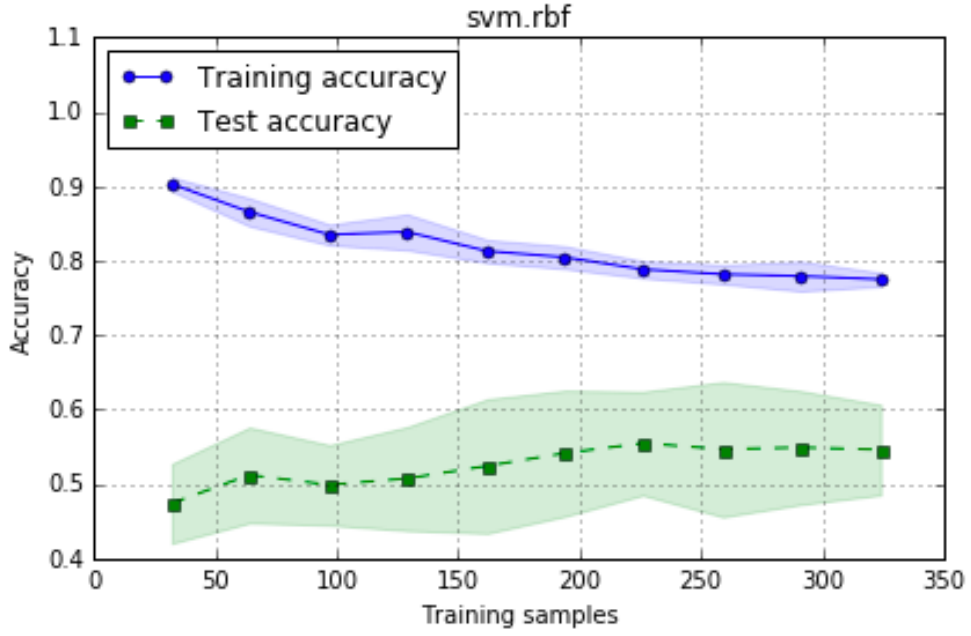
Method	Training accuracy(n=11)	Test accuracy(n=11)	Training accuracy(n=2)	Test accuracy(n=2)
logistic regression	0.548	0.558	0.543	0.551
svm.linear	0.593	0.545	0.537	0.487
svm.poly	**0.776**	0.577	0.546	0.564
svm.rbf	**0.767**	0.532	0.562	0.564
svm.sigmoid	0.449	0.494	0.496	0.551

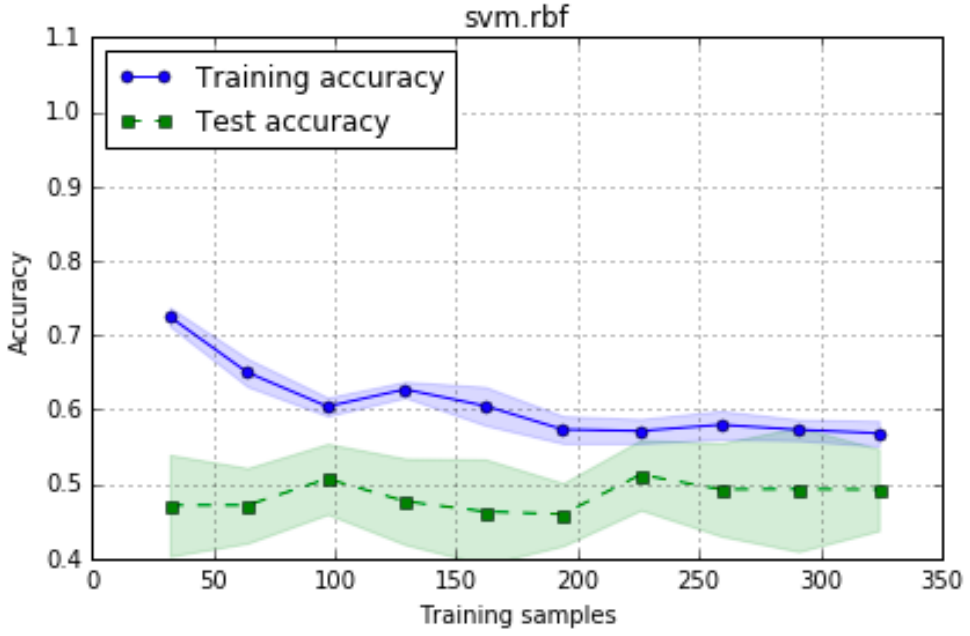

svm.poly
Training accuracy
Test accuracy
Accuracy
Training samples

n=11

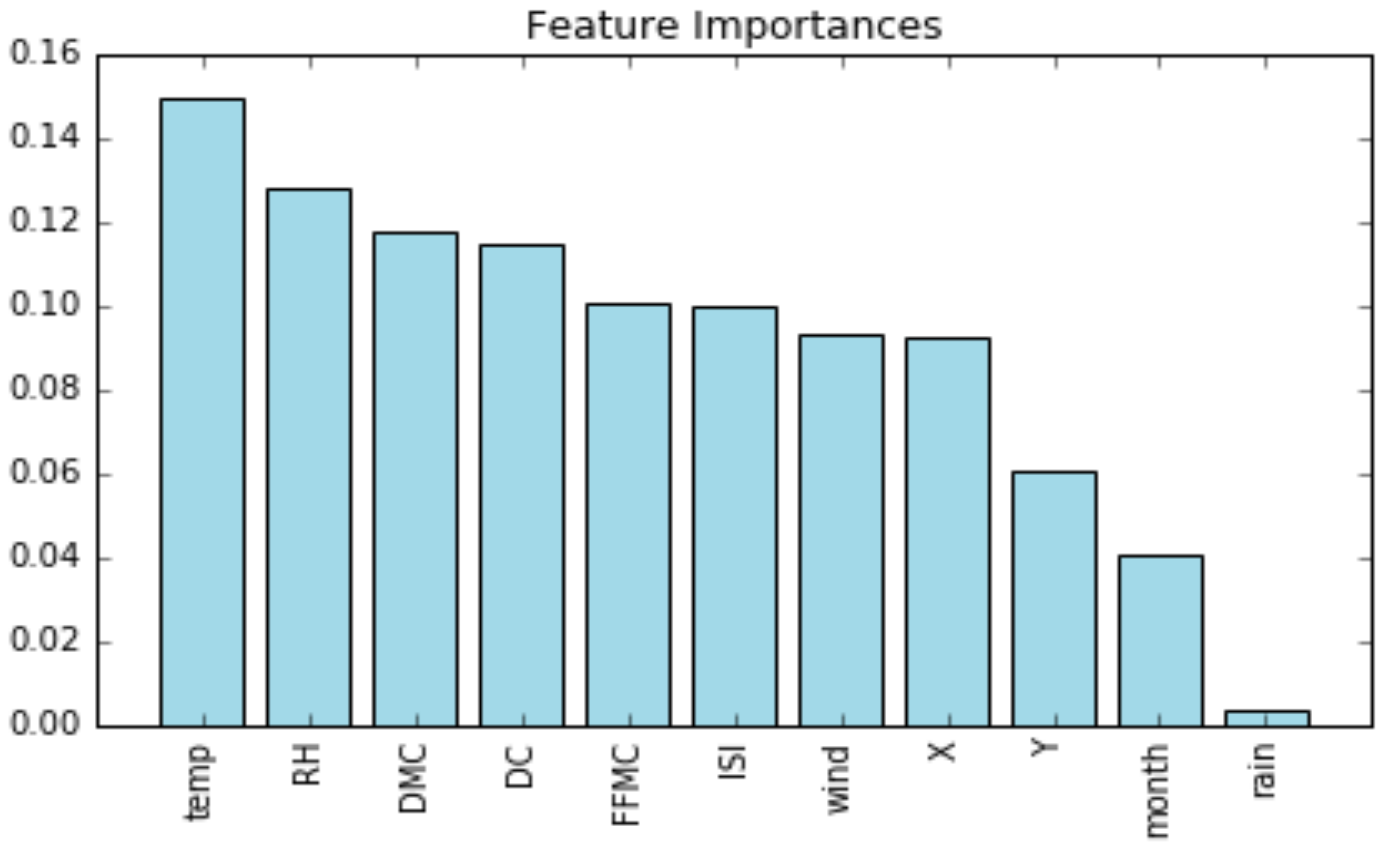

svm.poly
Training accuracy
Test accuracy
Accuracy
Training samples

n=2


svm.rbf
Training accuracy
Test accuracy
Accuracy
Training samples


svm.rbf
Training accuracy
Test accuracy
Accuracy
Training samples

FEATURE IMPORTANCE



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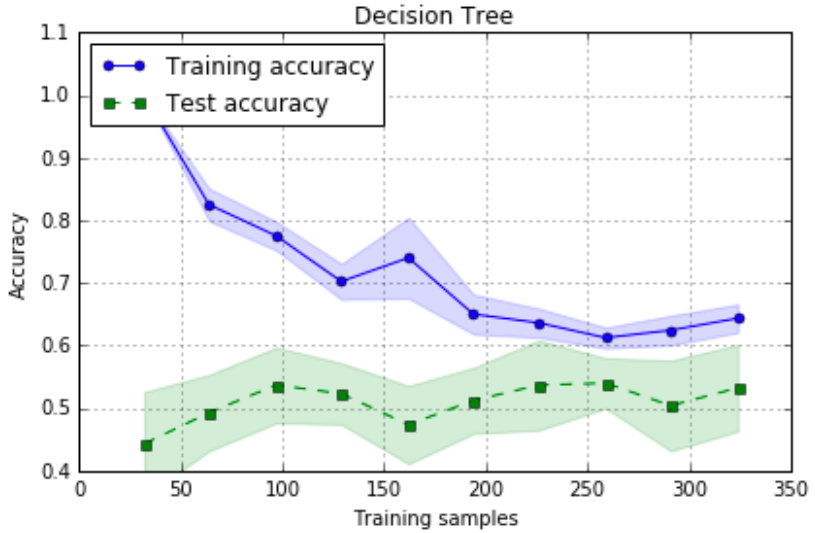
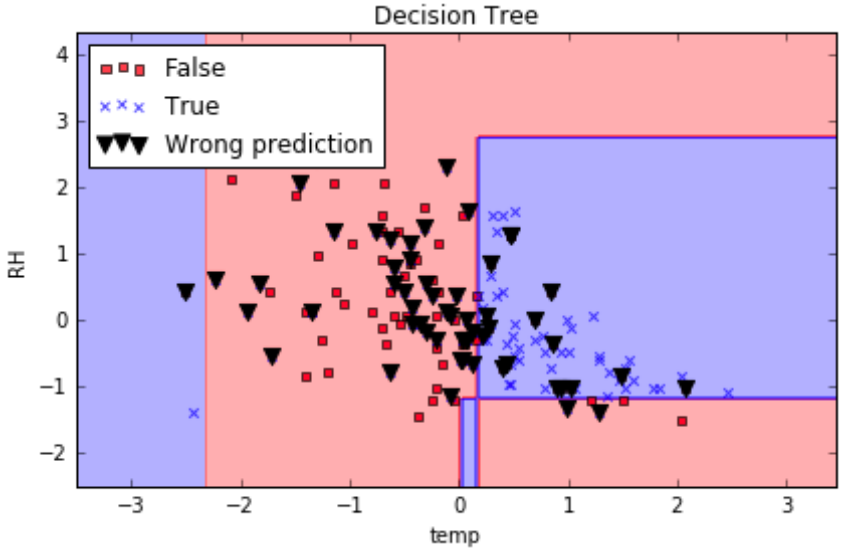
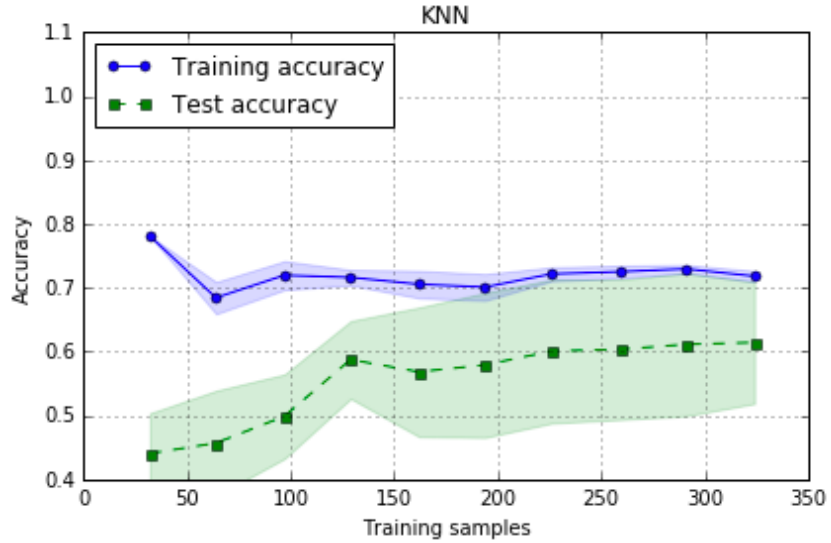
0.11759765 0.11432912
0.10071045 0.10008146
0.09281338 0.09269931
0.06072502 0.04009978
0.00353211]

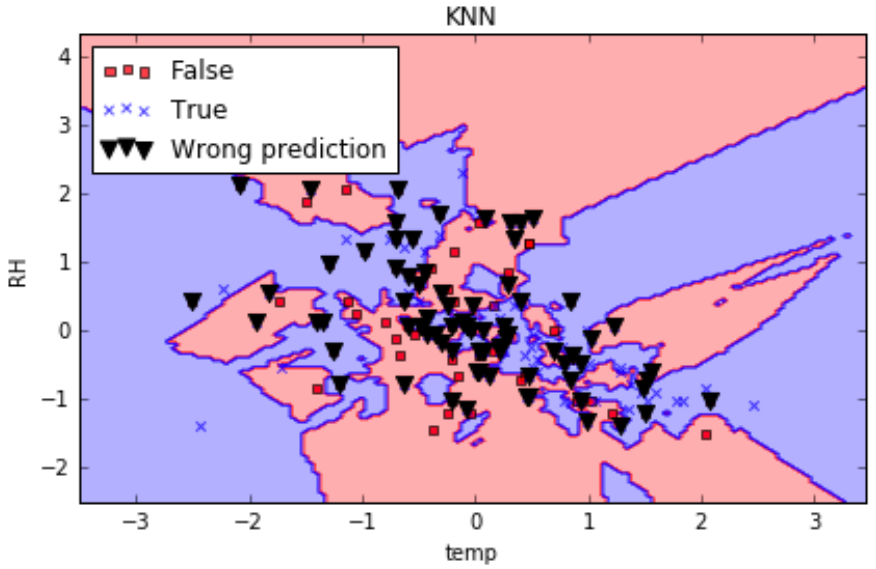
CLASSIFIER METHODS

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**


Decision Tree
Training accuracy
Test accuracy
Accuracy
Training samples


Decision Tree
False
True
Wrong prediction
RH
temp


KNN
Training accuracy
Test accuracy
Accuracy
Training samples


KNN
False
True
Wrong prediction
RH
temp

THANKS FOR YOUR LISTENING AND ADVICE