

Learning Apache Spark with Python

Wenqiang Feng

CONTENTS

1	Prefa	ace	3
	1.1	About	3
	1.2	Motivation for this tutorial	1
	1.3	Copyright notice and license info	1
	1.4	Acknowledgement	1
	1.5	Feedback and suggestions	5
2	Why	Spark with Python?	7
	2.1	Why Spark?	7
	2.2	Why Spark with Python (PySpark)?	3
3	Conf	igure Running Platform 11	1
	3.1	Run on Databricks Community Cloud	l
	3.2	Configure Spark on Mac and Ubuntu	
	3.3	Configure Spark on Windows	
	3.4	PySpark With Text Editor or IDE)
	3.5	PySparkling Water: Spark + H2O	ó
	3.6	Set up Spark on Cloud	
	3.7	Demo Code in this Section	7
4	An Iı	ntroduction to Apache Spark 29)
	4.1	Core Concepts	
	4.2	Spark Components)
	4.3	Architecture	
	4.4	How Spark Works?	2
5	Prog	ramming with RDDs	3
	5.1	Create RDD	3
	5.2	Spark Operations	7
	5.3	rdd.DataFrame vs pd.DataFrame 39)
6	Statis	stics and Linear Algebra Preliminaries 55	5
	6.1	Notations	
	6.2	Linear Algebra Preliminaries	
	6.3	Measurement Formula	
	6.4	Confusion Matrix	3

	6.5	Statistical Tests
7	Data	Exploration 65
	7.1	Univariate Analysis
	7.2	Multivariate Analysis
8	Regre	
	8.1	Linear Regression
	8.2	Generalized linear regression
	8.3	Decision tree Regression
	8.4	Random Forest Regression
	8.5	Gradient-boosted tree regression
9	Regu	larization 12
	9.1	Ordinary least squares regression
	9.2	Ridge regression
	9.3	Least Absolute Shrinkage and Selection Operator (LASSO)
	9.4	Elastic net
10	Close	ification 123
10	10.1	Binomial logistic regression
	10.1	Multinomial logistic regression
		Decision tree Classification
		Random forest Classification
	10.5	Gradient-boosted tree Classification
		XGBoost: Gradient-boosted tree Classification
	10.7	Naive Bayes Classification
11	Clust	6
	11.1	K-Means Model
12		Analysis 193
	12.1	RFM Analysis Methodology
	12.2	Demo
	12.3	Extension
13	Text 1	Mining 20°
	13.1	Text Collection
	13.2	Text Preprocessing
	13.3	Text Classification
	13.4	Sentiment analysis
	13.5	N-grams and Correlations
	13.6	Topic Model: Latent Dirichlet Allocation
14	Socia	l Network Analysis 249
	14.1	Introduction
	14.2	Co-occurrence Network
	14.3	Appendix: matrix multiplication in PySpark
	14.4	

Python Module Index							
Bił	oliogra	aphy	405				
24	Main	Reference	403				
	23.8	Evaluation API	397				
	23.7	Tuning API					
	23.6	Pipeline API					
	23.4 23.5	Clustering API					
	23.3	Clustering A.P.I.					
	23.2	Regression API					
	23.1	Stat API					
23	PySp	ark API	319				
22	My C	Cheat Sheet	315				
	21.2	Converting Demos	310				
		How to Install	309				
21	Zepp	elin to jupyter notebook	309				
	20.5	Auditing on Big Dataset	299				
	20.4	Test					
	20.3	Uninstall	297				
	20.2	Install from Repo					
4 0	20.1	Install with pip					
20	PySn	ark Data Audit Library	297				
		Pacakge Publishing on PyPI					
19		Package Wrapper	293 293				
10	VV	n DuCuault Daaltaga	202				
18		al Network Feedforward Neural Network	289 289				
	NI	al Nisamonia	200				
		Demos					
	17.1	Metropolis algorithm					
17		xov Chain Monte Carlo	279				
	16.2	Simulating a Random Walk	269				
		Simulating Casino Win	267				
16	Mont	te Carlo Simulation	267				
	15.3	Demo	259				
	15.2	Alternating Least Squares					
		Recommender systems	258				
15	ALS:	Stock Portfolio Recommendations	257				

Index 409



Welcome to my **Learning Apache Spark with Python** note! In this note, you will learn a wide array of concepts about **PySpark** in Data Mining, Text Mining, Machine Learning and Deep Learning. The PDF version can be downloaded from HERE.

CONTENTS 1

2 CONTENTS