

Contents

<i>Preface</i>	(ix)
<i>About the Author</i>	(xi)

Chapter 1: Data Science: Key Concepts

<i>Five Disruptive Products</i>	1
<i>The Japanese App</i>	1
<i>The Healthcare App</i>	2
<i>Coursera</i>	3
<i>Sensory Device in Agriculture Sector</i>	4
<i>Autonomous Car</i>	4
<i>Data Science Vs Traditional Methods</i>	5
<i>Differences in Architecture</i>	6
<i>Demystifying Machine Learning</i>	7
<i>Technique 1: Segmentation</i>	7
<i>Technique 2: Unstructured Text mining</i>	11
<i>Technique 3: Use of scoring for signal processing</i>	12
<i>Technique 4: Forecasting</i>	12
<i>Technique 5: Recommenders</i>	12
<i>Reference Architecture</i>	14
<i>Hands on Segementation</i>	16
<i>Summary</i>	18

Chapter 2: Spotting Signals: An Overview

<i>Signals across Verticals</i>	20
<i>Analyzing a Signal Pattern</i>	21
<i>Application of Signal Pattern Observed</i>	21
<i>Signals: A Few Key Concepts</i>	23
<i>Signal Extraction Methodology – Simplistic View</i>	24
<i>Simplistic Nine Step Process</i>	24
<i>Analytical Tool – Tool R</i>	26
<i>Basic Commands in R</i>	27
<i>Step 1 Download R</i>	27

Chapter 3: Problem based Analysis

<i>Exploratory Data Analysis (EDA)</i>	35
<i>Univariate Analysis</i>	35
<i>Questions Answered by Univariate Analysis</i>	36
<i>Objectives of EDA</i>	37
<i>Univariate Analysis Across Sectors</i>	38
<i>Types of Variables and Measures in EDA</i>	39
<i>Univariate Data Analysis</i>	40
<i>Measures of Central Tendency.....</i>	40
<i>Measure of Dispersion.....</i>	40
<i>Scope of Data Analyzed - EDA (Fleet Industry)</i>	42
<i>Basic Commands in R</i>	47
<i>Summary.....</i>	49

Chapter 4: Bivariate Analysis

<i>Correlation</i>	51
<i>Cross Tabs.....</i>	52
<i>Cross Tab Analysis – Core Philosophy.....</i>	55
<i>Correlation Analysis Across Industries</i>	55
<i>Retail Industry.....</i>	55
<i>Telecom Industry.....</i>	56
<i>Banking Industry</i>	57
<i>Cross Tab Analysis Across Industries</i>	57
<i>Retail Industry.....</i>	57
<i>Telecom Industry.....</i>	57
<i>Banking Industry</i>	58
<i>Pearson's Correlation</i>	58
<i>Core Foundational Concepts in Cross Tabs</i>	59
<i>Summary.....</i>	62

Chapter 5: Visual Constructs

<i>Detecting Patterns using Visual Constructs</i>	63
<i>Demystifying Advanced Visualization.....</i>	64
<i>Box Plot.....</i>	64
<i>Scatter Plot</i>	65
<i>Geospatial Map</i>	65
<i>Heat Maps</i>	66

<i>Spider Chart</i>	68
<i>Advanced Visualization Example</i>	68
<i>Domestic Loan Analysis</i>	69
<i>Core Concepts in Advanced Visualization</i>	70
<i>Visualization Consumers</i>	70
<i>Creating Dashboards</i>	71
<i>Connecting the Dots to Create a Dashboard</i>	72
<i>Best Practices in Designing Dashboards and Scoreboards</i>	72
<i>Visualization Commands in R</i>	73
<i>Summary</i>	76

Chapter 6: Business Story Telling using R

<i>Visualization Commands in R</i>	77
<i>Small Multiples: A Visualization Construct</i>	79
<i>Bubble Chart: A Visualization Construct</i>	81
<i>10 Basic Commands in R</i>	82
<i>Summary</i>	85

Chapter 7: Exploratory Data Analysis Case Study

<i>Exploratory Data Analysis</i>	89
<i>Scenario 1: Survival Ananlysis</i>	89
<i>Scenario 2: Attrition Ananlysis</i>	91
<i>Scenario 3: Difference between Active and Inactive Customers: Valuable Vulnerable</i>	94
<i>Scenario 4: Days to Repeat Purchases</i>	96
<i>Scenario 5: Sales Trends.Seasonality in Sales/ Identifying Patterns</i>	99
<i>Scenario 6: Segmenting Watch Company's Customers Region Wise</i>	100
<i>Scenario 7: Customer Lifetime Value</i>	103
<i>Summary</i>	104

Chapter 8: Machine Learning in Action

<i>Support Vector Machines (SVM)</i>	105
<i>Decision Tree</i>	106
<i>Three Important Things about Decision</i>	107

<i>Random Forest</i>	107
<i>A/B Testing</i>	108
<i>Collaborative Filtering</i>	110
<i>Fixed Size Neighborhood</i>	111
<i>Threshold based Neighbourhood</i>	112
<i>Graph</i>	114
<i>Structure Unstructured Data</i>	117
<i>Summary</i>	118

Chapter 9: Regression

<i>Introduction</i>	119
<i>5 Powerful Unanswered Questions by Regression –</i>	
<i>Unknown Unknowns</i>	121
<i>Regression Across Sectors</i>	122
<i>Scenario 1: Cost of Insurance</i>	122
<i>Scenario 2: Model Building for Property Design</i>	123
<i>Scenario 3: Estimating Patients Stay at Hospital</i>	124
<i>Scenario 4: Estimate Defect Density</i>	124
<i>Population and Sample Regression Models</i>	125
<i>Commands in R</i>	128
<i>Correlation # Causation</i>	130
<i>Summary</i>	130

Chapter 10: Dimensionality Reduction Technique

<i>Feature Engineering</i>	133
<i>Feature Engineering – Key Point</i>	135
<i>Feature Selection - Definition</i>	135
<i>Feature Selection - Optimality</i>	136
<i>Correlation and Variables</i>	136
<i>Ranking Criteria - Correlation</i>	137
<i>Feature Subset Selection</i>	139
<i>Summary</i>	142
Case Studies	143
References	169
Index	171