

Intro to Python® for Computer Science and Data Science

Learning to Program with AI, Big Data and the Cloud

by Paul Deitel & Harvey Deitel

PART I

CS: Python Fundamentals Quickstart

CS 1. Introduction to Computers and Python

DS Intro: AI—at the
Intersection of CS and DS

CS 2. Introduction to Python Programming

DS Intro: Basic Descriptive Stats

CS 3. Control Statements and Program Development

DS Intro: Measures of Central
Tendency—Mean, Median, Mode

CS 4. Functions

DS Intro: Basic Statistics—
Measures of Dispersion

CS 5. Lists and Tuples

DS Intro: Simulation and
Static Visualization

PART 2

CS: Python Data Structures, Strings and Files

CS 6. Dictionaries and Sets

DS Intro: Simulation and
Dynamic Visualization

CS 7. Array-Oriented Programming with NumPy High-Performance NumPy Arrays

DS Intro:
Pandas Series and DataFrames

CS 8. Strings: A Deeper Look Includes Regular Expressions

DS Intro: Pandas,
Regular Expressions and
Data Wrangling

CS 9. Files and Exceptions

DS Intro: Loading Datasets from
CSV Files into Pandas DataFrames

PART 3

CS: Python High-End Topics

CS 10. Object-Oriented Programming

DS Intro: Time Series and
Simple Linear Regression

CS 11. Computer Science Thinking: Recursion, Searching, Sorting and Big O

CS and DS Other Topics Blog

PART 4

AI, Big Data and Cloud Case Studies

DS 12. Natural Language Processing (NLP)

Web Scraping in the Exercises

DS 13. Data Mining Twitter®

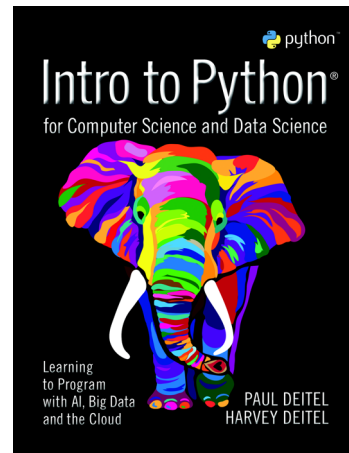
Sentiment Analysis, JSON and
Web Services

DS 14. IBM Watson® and Cognitive Computing

DS 15. Machine Learning: Classification, Regression and Clustering

DS 16. Deep Learning Convolutional and Recurrent Neural Networks; Reinforcement Learning in the Exercises

DS 17. Big Data: Hadoop®, Spark™, NoSQL and IoT



1. Chapters 1–11 marked CS are traditional Python programming and computer-science topics.
2. Light-tinted bottom boxes in Chapters 1–10 marked DS Intro are brief, friendly introductions to data-science topics.

3. Chapters 12–17 marked DS are Python-based, AI, big data and cloud chapters, each containing several full-implementation studies.
4. Functional-style programming is integrated book wide.

5. Preface explains the dependencies among the chapters.
6. Visualizations throughout.

7. CS courses may cover more of the Python chapters and less of the DS content. Vice versa for Data Science courses.
 8. We put Chapter 5 in Part I. It's also a natural fit with Part 2.
- Questions? deitel@deitel.com