

MACHINE LEARNING & ARTIFICIAL INTELLIGENCE COURSE CONTENTS

INTRODUCTION AND BASICS

- INTRODUCTION TO JUPYTER NOTEBOOK AND GOOGLE COLAB
- MATHS FOR DATA SCIENCE - STATISTICS, LINEAR ALGEBRA, PROBABILITY THEORY
- BASIC PYTHON FOR DATA ANALYSIS
- DATA ANALYSIS, CLEANING AND PREPARATION USING PANDAS AND NUMPY
- DATA VISUALIZATION USING - MATPLOTLIB AND SEABORN

STATISTICAL DATA ANALYSIS

- EXPLORATORY DATA ANALYSIS
- MEASURING CENTRAL TENDENCY AND VARIANCE
- DATA AND SAMPLING DISTRIBUTIONS
- NORMAL DISTRIBUTION
- BINOMIAL DISTRIBUTION
- POISSON DISTRIBUTION
- STATISTICAL EXPERIMENTS AND SIGNIFICANCE TESTING
- P-VALUE
- CORRELATION
- CHI-SQUARE TEST
- STATISTICS FOR CLASSIFICATION AND REGRESSION

PANDAS LIBRARY

- INTRODUCTION AND SETUP
- BASIC FUNCTIONALITY AND COMPARISON WITH SQL
- INTRO TO DATA STRUCTURES - SERIES AND DATAFRAME
- DESCRIPTIVE STATISTICS AND STATISTICAL FUNCTIONS
- INDEXING, REINDEXING AND SELECTING DATA
- GROUPBY, MERGING/JOINING, CONCATENATION
- RESHAPING AND PIVOT TABLES
- WORKING WITH TEXT DATA
- PANDAS WINDOW FUNCTIONS
- AGGREGATIONS
- HANDLING MISSING DATA
- TIME SERIES / DATE FUNCTIONALITY
- TIME DELTAS
- HANDLING CATEGORICAL DATA
- SPARSE DATA
- VISUALIZATION IN PANDAS
- IO TOOLS
- OPTIONS AND SETTINGS
- ENHANCING PERFORMANCE
- SPARSE DATA STRUCTURES

NUMPY LIBRARY

- INTRODUCTION AND SETUP
- NDARRAY
- DATA TYPES AND WORKING WITH NUMPY ARRAYS
- NUMPY BROADCASTING

- STRING FUNCTIONS
- MATHEMATICAL FUNCTIONS
- SORT, SEARCH AND COUNTING FUNCTIONS
- LINEAR ALGEBRA
- I/O WITH NUMPY

MATPLOTLIB LIBRARY

- CHART AND CHART STYLING
- BOX PLOT
- HEAT MAPS
- SCATTER PLOTS
- BUBBLE CHARTS
- 3D CHARTS
- TIME SERIES
- GEOGRAPHICAL DATA
- GRAPH DATA

SEABORN LIBRARY

- INTRODUCTION AND SETUP
- IMPORTING DATASETS AND LIBRARIES
- FIGURE AESTHETIC
- COLOR PALETTE
- HISTOGRAM
- KERNEL DENSITY ESTIMATES
- VISUALIZING PAIRWISE RELATIONSHIP
- PLOTTING CATEGORICAL DATA
- DISTRIBUTION OF OBSERVATIONS
- STATISTICAL ESTIMATION
- PLOTTING WIDE FROM DATA
- MULTI PANEL CATEGORICAL PLOTS
- LINEAR RELATIONSHIPS
- FACET GRID
- PAIR GRID

