MSc - Data Mining

Topic 03 : Exploratory Data Analysis

Part 01 : Exploratory Data Analysis

Dr Bernard Butler and Dr Kieran Murphy

Department of Computing and Mathematics, WIT.
(bbutler@tssg.org and kmurphy@wit.ie)

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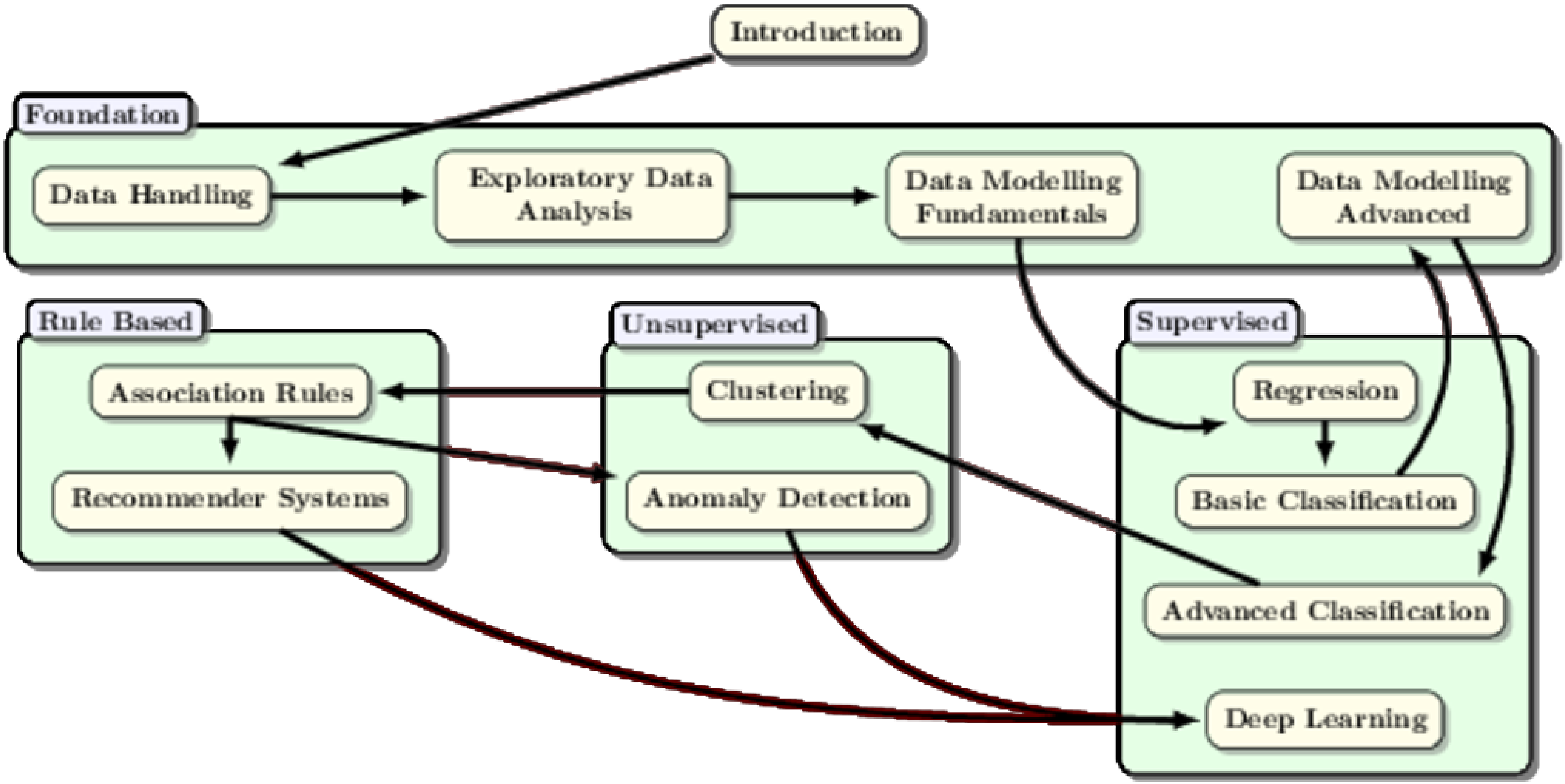
Outline

- EDA Process
- Datasets = Tips, Titanic and Algae Blooms
- Identifying and resolving issues (missing value, outliers)
- Generating ToDo list for Feature Engineering/Transformation/Selection

Data Mining



Introduction

Foundation

Data Handling

Exploratory Data Analysis

Data Modelling Fundamentals

Data Modelling Advanced

Rule Based

Association Rules

Recommender Systems

Unsupervised

Clustering

Anomaly Detection

Supervised

Regression

Basic Classification

Advanced Classification

Deep Learning

Exploratory Data Analysis — Summary

1. First Pass — Load Dataset and Initial Clean 4

First Pass — Load Dataset and Initial Clean

- Load dataset
- Check variables names
- Verify variable types
- Identify (and possibly address) missing values

Tips — Load

```python
df = pd.read_csv("tips.csv")
print(df.shape)
df.head(10)
```

```
(244, 7)
```

	total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	Female	No	Sun	Dinner	2
1	10.34	1.66	Male	No	Sun	Dinner	3
2	21.01	3.50	Male	No	Sun	Dinner	3
3	23.68	3.31	Male	No	Sun	Dinner	2
4	24.59	3.61	Female	No	Sun	Dinner	4
5	25.29	4.71	Male	No	Sun	Dinner	4
6	8.77	2.00	Male	No	Sun	Dinner	2
7	26.88	3.12	Male	No	Sun	Dinner	4
8	15.04	1.96	Male	No	Sun	Dinner	2
9	14.78	3.23	Male	No	Sun	Dinner	2

```python
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 244 entries, 0 to 243
Data columns (total 7 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   total_bill  244 non-null    float64
 1   tip          244 non-null    float64
 2   sex          244 non-null    object
 3   smoker       244 non-null    object
 4   day          244 non-null    object
 5   time         244 non-null    object
 6   size         244 non-null    int64
dtypes: float64(2), int64(1), object(4)
memory usage: 13.5+ KB
```

Issue: categorical data treated as object (string).

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