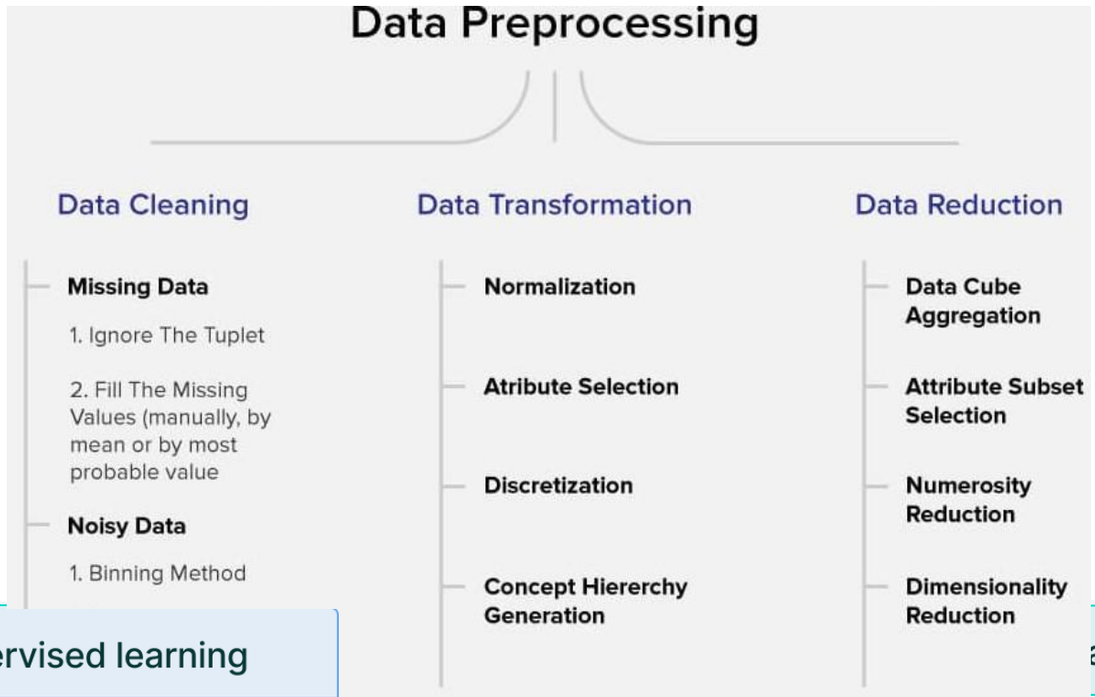
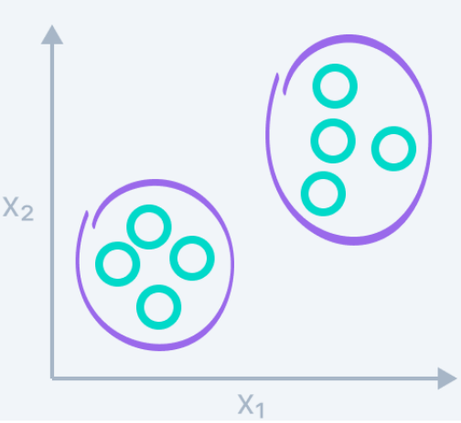
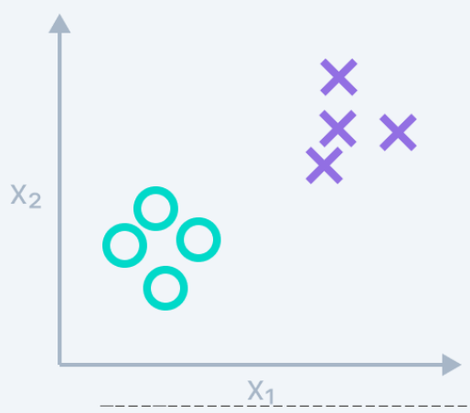
Instructions: If course materials brought you here, scroll or use links to sections.
=> Use links on downloaded.pdf! In git, download arrow is on the right above doc visual.

I.Data preprocessing and supervised, unsupervised algorithm purpose

retrieved from: https://www.v7labs.com/blog/supervised-vs-unsupervised-learning



Unsupervised learning		arning
Input data is unlabeled	• Feature Elicitation • Meaningful Compression • Structure Discovery • Big data visualization	Input data is labeled
Has no feedback mechanism		Has a feedback mechanism
Assigns properties of given data to classify it	**Clustering** • Recommender Systems • Targeted Marketing • Customer Segmentation	Data is classified based on the training dataset
Divided into Clustering & Association	**Classification** • Identity Fraud Detection • Image Classification • Customer Retention • Diagnostics	Divided into Regression & Classification
Used for analysis		Used for prediction
Algorithms include: k-means clustering, hierarchical clustering, apriori algorithm	**Regression** • Population Growth Predictio • Estimating life expectancy • Market Forecasting • Weather Forecasting • Advertising Popularity Predi	Algorithms include: decision trees, logistic regressions, support vector machine
A unknown number of classes		A known number of classes
	• Real-time decisions • Game AI • Robot Navigation • Learning Tasks • Skill Acquisition	

M.2.Assignment - Titanic Data

M	Topic & Assignment

M2

Titanic data mining analysis

A.

Background and overviews

- https://www.rdocumentation.org/packages/titanic/versions/0.1.0
- https://www.kaggle.com/competitions/titanic/overview
- https://www.encyclopedia-titanica.org/

The Titanic DataFrames describe the survival status of individual Titanic passengers, not the crew, with ages for ~half the passengers. One of the original sources is Eaton & Haas (1994) Titanic: Triumph and Tragedy, Patrick Stephens Ltd includes a passenger list created by many researchers and edited by Michael A. Findlay [1].

B.

Interesting models - built in R code for display convenience

```
> data <- read.csv('titanic.csv')
```

```
# Linear regression model
model <- lm(survived ~ age + sex + pclass + sibsp + parch, data = data)
```

Binomial Predicting survival based on age, sex, and passenger class

```
model <- glm(survived ~ age + sex + pclass, data = titanic, family = binomial)
```

Poisson - Predicting the count of siblings/spouses based on passenger age

```
model <- glm(sibsp ~ age, data = titanic, family = poisson) summary(model)
```

Neg.Binomial - Predict count of parents/children by passenger age and sex

```
model <- glm.nb(parch ~ age + sex, data = titanic) summary(model)
```

C.

Data <class.github>

- raw data; unsplit and preprocessed [source: https://hbiostat.org/data/ <titanic.3>
- train, test; from kaggle

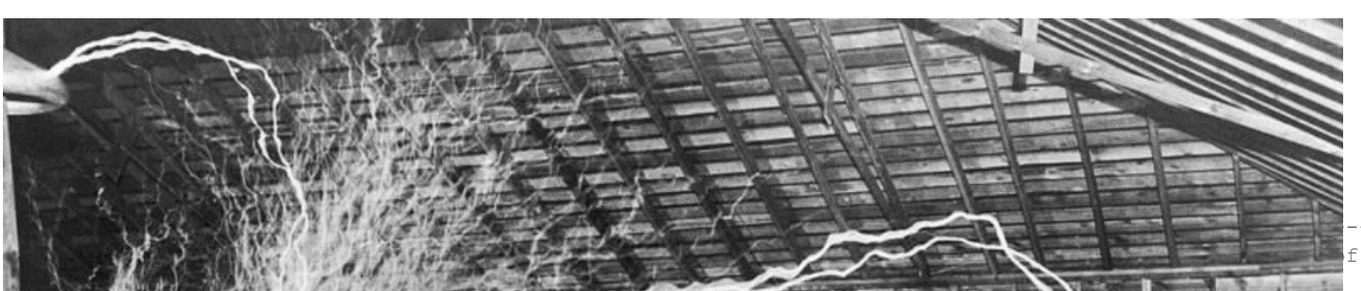
D.

Data dictionary

passengerid	sequential unique id
survived	0=no, 1=yes
pclass	1,2,3:passenger class (1st, 2nd, 3rd); proxy for socio-economic class
name	Christian name
sex	male, female
age	00, NA, blank. in years; some infants w fractional values
sibsp	number of siblings and spouses aboard
parch	<parent.child> #parents or chil
ticket	alpha, numeric, character
fare	0.0000 decimals
cabin	C#, blank,
embarked	C, Q, S <Cherbourg, Southampton, and Queenstown>

References:

1. Harrell Jr, F.E.,(2002). Titanic data, Vanderbuilt biostatistics datasets. Vanderbilt University. Retrieved from: https://hbiostat.org/data/repo/titanic.html. Retrieved on 05.15.2023.



Master templates

my.header.2

Mod	Topic & Assignment
2	

my.header.1

Wk	Focus & Medium	Weekly Topic & Assignment
0		

Wk	Weekly Topic & Assignment
11 Mar	**Header:** **1) What is** 1) Perhaps one of th **2) What isn't** a) Getting your n **3) The mechanics and process** • Orient **4) problem** **Templated techniques** help you quickly

Wk	Weekly Topic & Assignment
11 Mar	**Templated writing techniques** hel **Use kernel sentences:** simple, declarative, active sentences (N.Chomsky) Use of clear and concise language that is free of jargon and technical terms focuses the reader. a) Joh **1. Template: how.to. abc** 1.1. **item.1:** Tai 1.2. **item.s:** U 1.3. **item.:** Us 1.4. **item.:** Ack **1.5. item.5:** abdc **Scenario**: The