Project

Crime prediction

Analysis

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Crime prediction Modeling

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Here in this crime Prediction Analysis, Data modeling plays an important role in classification of data.

⇒ Data modeling with
- Binary classification
- Multi-class classification

Machine learning ⇒ learns from the data provided and acts accordingly in the situation provided

Supervised Machine learning ⇒ known dataset is provided to make prediction
two variable ⇒ input & output.

supervised learning algorithm builds a model where the response variable is used over the known dataset to check accuracy of the model.

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Supervised machine learning } ⇒ classification achieved using

Crime prediction ⇒ classification problem.

Classification ⇒ classifies data into different parts or classes (or groups)

- Used to predict from which dataset the input data belongs to.

Here in the crime prediction Analysis we have taken the crime data from chicago police department data portal.

crime dataset contains the crime happen over the year with location and crime types.

With this data we can tell that the place with high crime rate-risky, the place with low or no crime rate - safer place.

severity ⇒ severe, Not severe.

classification ⇒ process of assigning new input variables (x) to the class they most likely belong to based on a classification model

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as constructed from previously labeled training data.

Data with lable is used to train a classifier, then only it can perform well on data without labels

The process of continuous classification of previously known classes train a machine if classes are discrete it can be difficult to perform classification task.

Binary classification

⇒ Process of classification, the given data classified into two classes

⇒ Kind of predictions about which of the two groups the they belong to.

⇒ If the crimes are happening in two different location, with the type of crime feel the place with crime severe or not.

Binary classification ⇒ Two discrete classes
one is severe
other is not-severe.

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Binary classification uses algorithms to do the task

- Logistic Regression
- K-Nearest Neighbors
- Decision Tree
- Support Vector Machine
- Naive Bayes.

Detailed explanation will be given in the coming papers.

Key parameters in Binary classification

- Precision
- Recall
- f1 score.

Precision - Provides the yes/no value tells the model ability to correctly inpret positive Observation

Recall - sensitivity measure, this is used to measure the how sensitive the classifier is to detecting the positive cases.

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F1 Score

it is a weighted average of precision and recall,

- It has two values 1 and 0

1 → best value

0 → Worst

Precision & recall → make equal contribution to F1 ranking.