PREDICTING PATIENT RE-ADMISSION WITHIN 30 DAYS

THE CLIENT

The client is a a leading provider of comprehensive health informatics solutions for more than 900+ hospitals in the US.

BUSINESS NEED

The customer wanted ALTEN Calsoft Labs to identify a patient's chance of getting re-admitted upon discharge within 30 days.

SOLUTION DELIVERED

ALTEN Calsoft Labs' Big Data Analytics team did the following to come up with a predictive analytics solution.

Identify the Predictors

- Demographics – Age, Sex
- Lab data – Includes lab tests
- Vitals – Includes BP, Sugar, Weight
- Visit types – Emergency, In-patient, outpatient
- Diagnosis & Diseases/ ailments – Heart, Pneumonia
- Previous hospital visit
- Length of stay

Build/Evaluate the Model

- Model is maintained dynamically
- Split the data into
  - Training set
  - Test set
- Build the model on training set
  - Model is serialized
  - ready for new datasets

Process the Dataset

- Date fields – Validate the date
- Calculate the 30 days stay
- Refine the dataset for building Model/Analysis

Identify the Suitable Algorithm
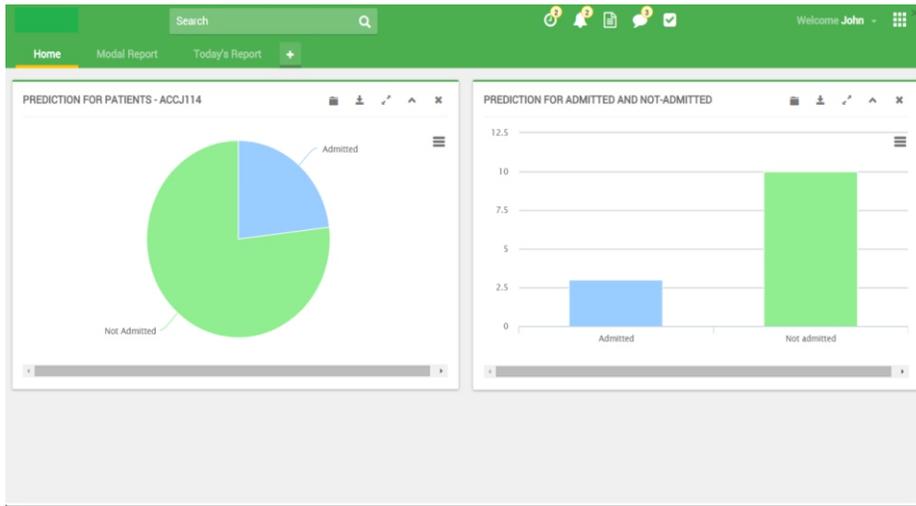
- Gradient Boosting
- Random Forest
- Support Vector Machines
- Logistic Regression
- K-Nearest Neighbour
- Ridge

Data for new evaluation

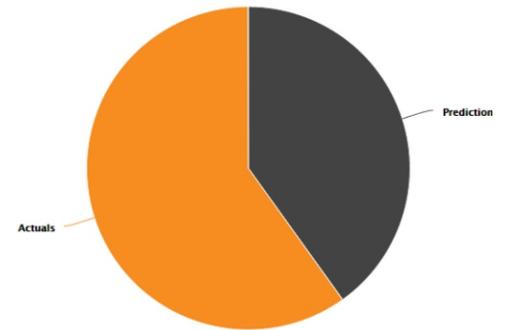- New data sets are analysed
- Available in .CSV

Data Visualization

- .csv is converted into JSON format
- Displayed using Alten Calsoft UI framework

ACLPatientID	Patient_Name	Age	Sex	Predictions
ACL000013503	JOHN BADLEY	72	M	Y
ACL000013156	STACY COLLINS	73	F	Y
ACL000011568	MICHAEL ARCHER	81	M	Y

TECHNOLOGY USED

- **Business Platform:** Hadoop - Hortonworks
- **Paradigm:** Hive, MapReduce
- **Machine Learning Tools:** Scikit-Learn, R
- **Language:** Python, R

BUSINESS BENEFITS

Clinicians can be prepared to provide better post-discharge care for patients who are likely to get re-admitted.

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