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Astronomically immense using data sets & Treasure Hunt on Web-predicated Distributed computing

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Abstract

Analytics play a crucial role in the information age. The projected demand for highly valued analytical aptitude dictates that certain measures must be taken to meet the requisite. Albeit there are numerous sources to learn analytics, they do not provide immersive, hands on experience to work with astronomically immense data sets. Treasure Hunt is a product developed by Analyttica DataLabs Pvt Ltd., for learning analytics. It is a web-predicated Java application that is utilized to process data and derive information and in this process withal edify the utilizer the approach to analyze data.

Currently the platform runs on a single node fortifying only flat file as data with circumscribed visualizations. We are implementing distributed computing to fortify millions of users. We are integrating database connectivity to handle more sizably voluminous data sets. Once the required data is extracted, it can be visualized as any desired chart utilizing R graph so as to summarize and exhibit information in a manner that is facile to comprehend.

Keywords: Astronomically immense data sets; Treasure Hunt; Web-predicated; Distributed computing

Introduction

Treasure Hunt, a product that avails to train people in the field of analytics. Treasure Hunt is built on Java, but Java does not provide any API or package for analytics, hence integrating the application with analytics language such as R or SAS is very consequential part. R is a gratuitous software programming language and software environment for statistical computing and graphics. The R language is widely used among statisticians and data miners for developing statistical software and data analysis. The SAS language is a computer programming language utilized for statistical analyses, originated by a project at the North Carolina State University. It can read in data from mundane spreadsheets and databases and output the results of statistical analyses in tables, graphs, and as RTF, HTML, and PDF documents. The SAS language runs under compilers that can be utilized on Microsoft Windows, Linux, and sundry other UNIX and mainframe computers.SAS was integrated into the current application which was currently working with R.

If a utilizer needs to utilize the product, he/she has to register with a valid e-mail id. Registration module avails the application to keep track of who all utilize the application and if the credentials provided by them is valid. Registration additionally avails in keeping out bots and malware.

Utilizer can perform multiple operations on a given set of data. It could be the case that the utilizer was fortuitous in getting the operation right. This must be evaluated. To check the cognizance of the utilizer for that operation or check the subject cognizance of the utilizer, multiple cull questions will be exhibited. Endeavoring these questions are optional but if done so bonus points will be given, erroneous answers will have negative points.

As a data scientist, visualization is key in making felicitous interpretations, when the data set is profoundly and astronomically immense. To avail the utilizer understand the data set better an interactive chats are very paramount. R graph avails in achieving this, interacting R graph into the application proved to very valuable in enhancing the utilizer experience. Quality control and platform assessment is crucial for further development. The company should ken if the product is genuinely utilizable and if the customer has relished the product. Feedback of the application, feedback of individual challenge and error or bug reporting avails the company understand the product preponderant.

1. Related Work

2.1 Existing System:

Analytics is at the heart of a multitude of financial enterprises such as banks, investment firms, indemnification companies, pension funds etc. The type of data that is handles by these institutions varies across organizations. The consequences of this is that analysts must be edified how to deal with company categorical data and more importantly what patterns and trends to look out for. A general course in analytics will typically not suffice, Training employees requires paramount duration and investment and as a result more minute firms shun away from this and outsource the whole process. Outsourcing however, has its drawbacks, the most sizably voluminous one being exposing the data. Cutting down on training cost without compromising on quality suggest a novel solution to this quandary.

2.2 Proposed System:

Minimizing cost on training, translates to reducing the number of human trainers and additionally minimizing the time spent on training and evaluation. The solution involves the utilization of an automated system that trains the learner by guiding him or her through the process of analyzing a sample data set utilized in the organization.

Treasure Hunt is a comprehensive platform for analytics training.

2. Implementation

3.1 Database Connectivity:

One of the core functionality of Treasure Hunt is clients/users can upload their data and analyze it. Current platform fortifies upload of data from a flat file, but as in authentic time data is entirely stored in databases. It is a tedious process converting the entire data in database into flat file, it's not efficient in terms of time and security. So to facilitate the accomodation of users/clients we have developed this module. Utilizing this module clients/users can upload their data directly from their database to our application.

2.1.1 Normal query

3.1.1.1 Add Datasource:

First the utilizer needs to enter his datasource by giving the credentials, credentials include hostname, port number, authenticate id, and password. Now utilizer can test the connectivity and preserve the credentials for future use, then the module checks for the connection establishment with the remote datasource, once the connection is established the credentials are stored in our local database.

3.1.1.2 View Datasource:

Once the datasource is integrated prosperously the utilizer can view all the databases present in it. Utilizer can further view the contents of the database by clicking on it, the tables along with their columns will be exhibited in a tree structure in the UI.

3.1.1.3 View Credentials

Once the datasource is integrated the utilizer can view the credentials of the datasource by clicking on the info icon to the right of datasource designation. On click of this icon utilizer optically discerns the credentials of the culled datasource.

3.1.1.4 Execute Query

Fig (1) shows how users can execute query by culling the datasource and database from which they optate to query, they require to enter the query in the text box provided, and they can withal cull the tables/columns from the tree structure shown in the left plane. Once utilizer clicks on run the query the application validates the query by getting the credentials of the remote datasource from the local database. After validation the application execute the query as sends the result back to the UI.

3.1.1.5 View Results

After query gets executed users can view the records returned in a table format in the UI.

3.1.1.6 Download as CSV

Once results are displayed the user can download the entire content as a CSV (comma separated value) file.

3.1.1.7 Upload Content

If user wants to analyze the data generated he can upload the data, once data is uploaded its gets assigned to a project.

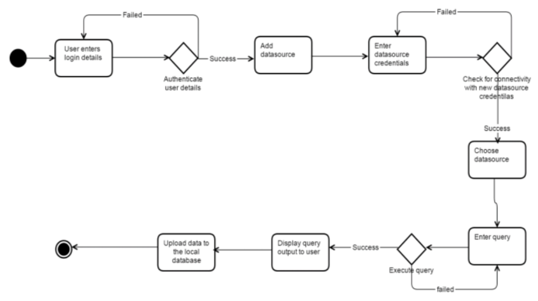

Failed
User enters login details
Authenticate user details
Success
Add datasource
Enter datasource credentials
Failed
Check for connectivity with new datasource credentilas
Success
Choose datasource
Enter query
Execute query
failed
Success
Display query output to user
Upload data to the local database

Fig (1): Flowchart for normal query execution

3.1.2 Parameterized Query

Parameterized query means users can pass the value to specified fields at run time i.e., while executing the query.

FORMAT: This is the format in which the user has to enter the query

SELECT * FROM TABLE WHERE COLUMN_NAME = $COLUMN_VALUE DEFAULT $COLUMN_VALUE = DEFAULT_VALUE

E.g.: select * from user_details where user_name = $user_id_value default $user_id_value = 9364

All the components are same as above mentioned for normal query except the execute query part.

3.1.3 Dynamic Dataset:

In authentic-time data keeps on engendering and gets stored in the database, so whenever a utilizer executes a query he gets the data at that point. So if users wants to again analyze the content of the same query at that point he requires to do the entire process again, so to optimize the process we implemented this feature. So whenever utilizer wants to analyze the same data he requires to just click on the analyze button and the application takes care of everything from generation of dataset to engenderment of a project. Whenever the utilizer clicks on analyze the application gets the corresponding query from the local database, executes the query against the credentials and gets the result of that query and assigns it to a project.

3.2 Distributed r Execution

The R language is widely used among statisticians and data miners for developing statistical software

R and its libraries implement a wide variety of statistical and graphical techniques, including linear and nonlinear modeling, classical statistical tests, time-series analysis, relegation, clustering, and others. R is facilely extensible through functions and extensions, and the R community is noted for its active contributions in terms of packages. Many of R's standard functions are indited in R itself, which makes it facile for users to follow the algorithmic culls made

In R Programming Language X, Y, Z are macrocosmic notations which denotes

X<- input

Y<-options

Z<-Function(X, Y)

Java application prepares the information needed as an input by R.

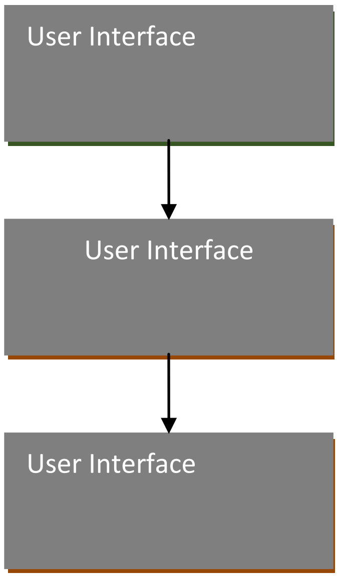
R will execute the request and give the replication to the utilizer

Java application and R runs on same system .So the request and replication has one to one correspondence.

Multiple requests can’t be handled at the same time

Requests has to wait in a queue until the execution of the proceeding request is consummated.

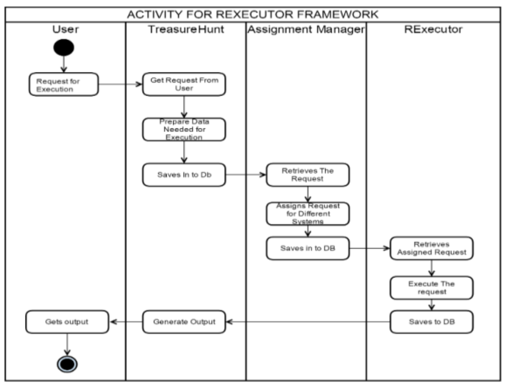
If the requests are coming perpetually the load on the server increases



Fig(2): Parallel R System Architecture

Fig(2) shows the execution of requests by R in single machine. Currently it has one to one correspondence of requests and response.

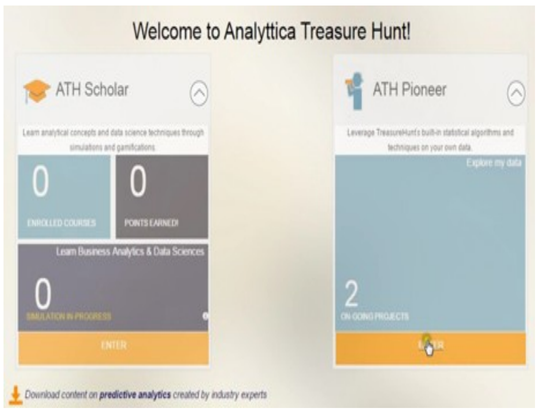
3.2.1 Distributed r Systems:



Fig(3): Activity diagram of distributed R systems

Fig (3) shows the execution of requests by R in distributed machines. Currently it has n to n correspondence of requests and response.

3. Experimental Results


Welcome to Analyttica Treasure Hunt!

ATH Scholar

Learn analytical concepts and data science techniques through simulations and gamifications

0 ENROLLED COURSES

0 POINTS EARNED!

Learn Business Analytics & Data Sciences

0 SIMULATION IN PROGRESS

ENTER

ATH Pioneer

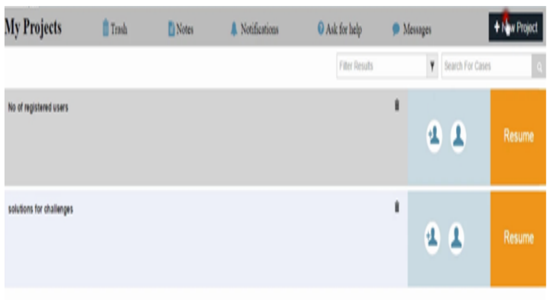
Leverage TreasureHunt's built-in statistical algorithms and techniques on your own data.

Explore my data

2 ON GOING PROJECTS

Download content on **predictive analytics** created by industry experts

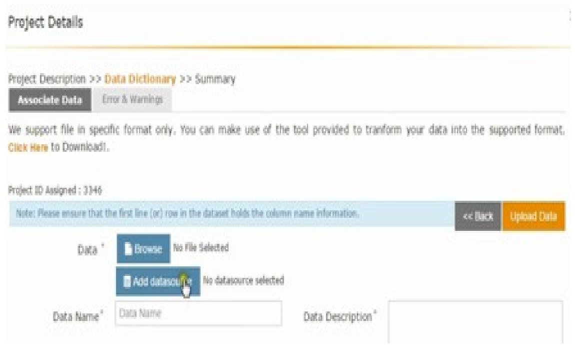
Fig 1: Dashboard page of the platform Page.



No of registered users

solutions for challenges

Fig 2: Project main page


Project Details

Project Description >> Data Dictionary >> Summary

We support file in specific format only. You can make use of the tool provided to tranform your data into the supported format. Click Here to Download!.

Project ID Assigned : 3346

Note: Please ensure that the first line (or) row in the dataset holds the column name information.

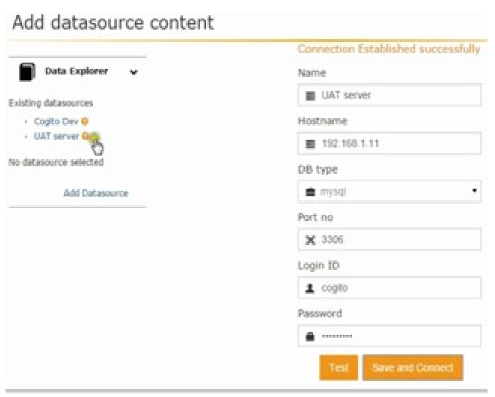
Data * No File Selected

No datasource selected

Data Name* Data Name

Data Description*

Fig 3:Upload data page


Add datasource content

Existing datasources

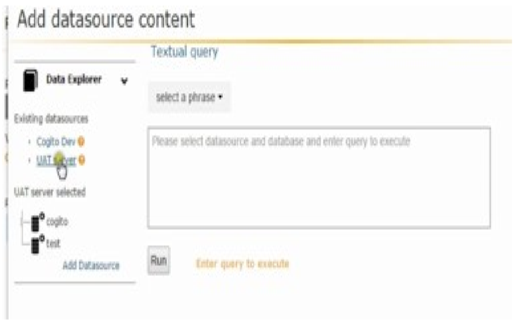
- Cogito Dev
- UAT server

No datasource selected

Connection Established successfully

Name	UAT server
Hostname	192.168.1.11
DB type	mysql
Port no	3306
Login ID	cogito
Password	·········

Fig 4: Add datasource credentials page


Add datasource content

Existing datasources

- Cogito Dev
- UAT server

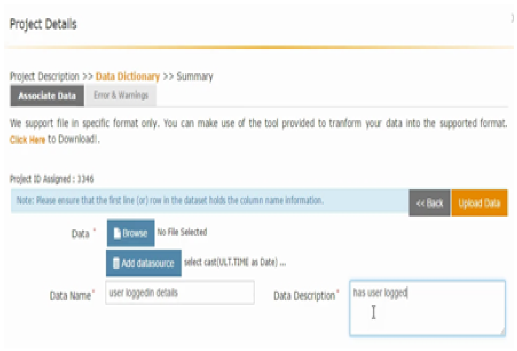
UAT server selected

- cogito
- test

Please select datasource and database and enter query to execute

Enter query to execute

Fig 5:Selecting a data source for query execution page


Project Details

Project Description >> Data Dictionary >> Summary

We support file in specific format only. You can make use of the tool provided to tranform your data into the supported format. Click Here to Download!.

Project ID Assigned : 3346

Note: Please ensure that the first line (or) row in the dataset holds the column name information.

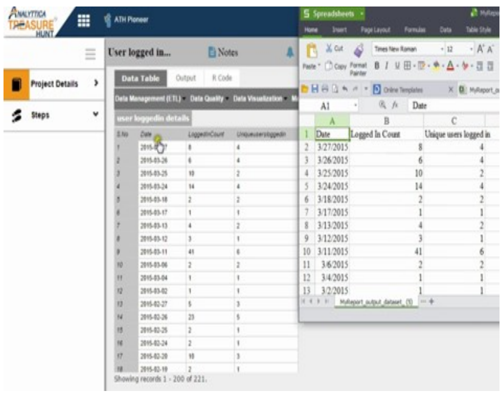
Data * No File Selected

select cast(ULT.TIME as Date) ...

Data Name* user loggedin details

Data Description* has user logged

Fig 6: Assigning dataset to project page



user loggedin details

S.No	Date	LoggedInCount	Uniqueusersloggedin
1	[illegible]	8	4
2	2015-03-26	6	4
3	2015-03-25	10	2
4	2015-03-24	14	4
5	2015-03-18	2	2
6	2015-03-17	1	1
7	2015-03-13	4	2
8	2015-03-12	3	1
9	2015-03-11	41	6
10	2015-03-06	2	2
11	2015-03-04	1	1
12	2015-03-02	1	1
13	2015-02-27	5	3
14	2015-02-26	23	5
15	2015-02-25	2	1
16	2015-02-24	2	1
17	2015-02-20	10	3
18	2015-02-19	2	1

Showing records 1 - 200 of 221.

A1 Date

	A	B	C
1	Date	Logged In Count	Unique users logged in
2	3/27/2015	8	4
3	3/26/2015	6	4
4	3/25/2015	10	2
5	3/24/2015	14	4
6	3/18/2015	2	2
7	3/17/2015	1	1
8	3/13/2015	4	2
9	3/12/2015	3	1
10	3/11/2015	41	6
11	3/6/2015	2	2
12	3/4/2015	1	1
13	3/2/2015	1	1

Fig 7: Final data set assigned to a project and the downloaded csv file.

4. Conclusion

All the modules were prosperously consummated, few of which are currently in the relinquished product and a few are in testing face after which these modules would be deployed in the main product. Other modules need minor modification afore it could be deployed in the final product. Treasure hunt was designed to be a consummate platform for analytics. This translates to incremented flexibility in culling the statistics package, support for inditing custom functions or macros to perform analysis.

Engendering challenges that do not have data available. SQL language capability to fetch data from the database which is required for the analysis. Incrementing level of gamification techniques for enhancing utilizer experience. Unstructured data analysis will withal be given more focus. The product is presently targeted towards businesses, however it may be expanded to suite a wider utilizer base.

5. References

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