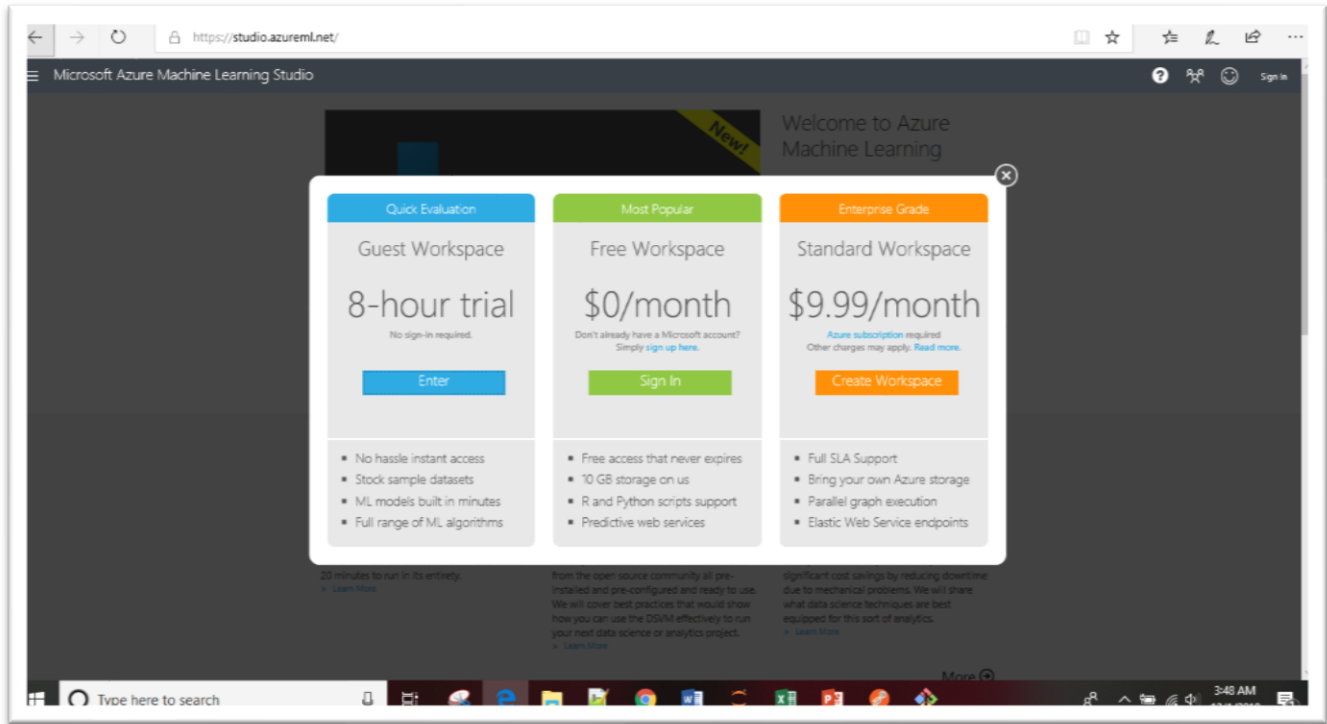


Azure Machine Learning Studio Demo

Quick Setup

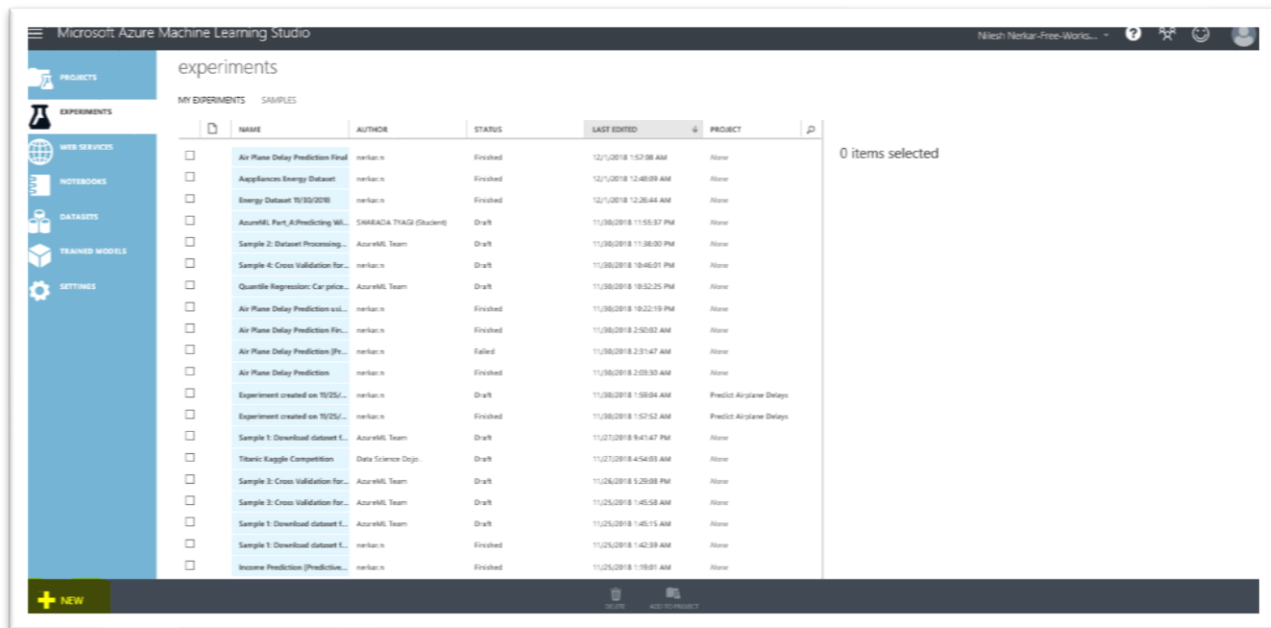
For using ML Studio go to the url: <https://studio.azureml.net>

One can sign up with his or her Microsoft Account using any of the following available plan:

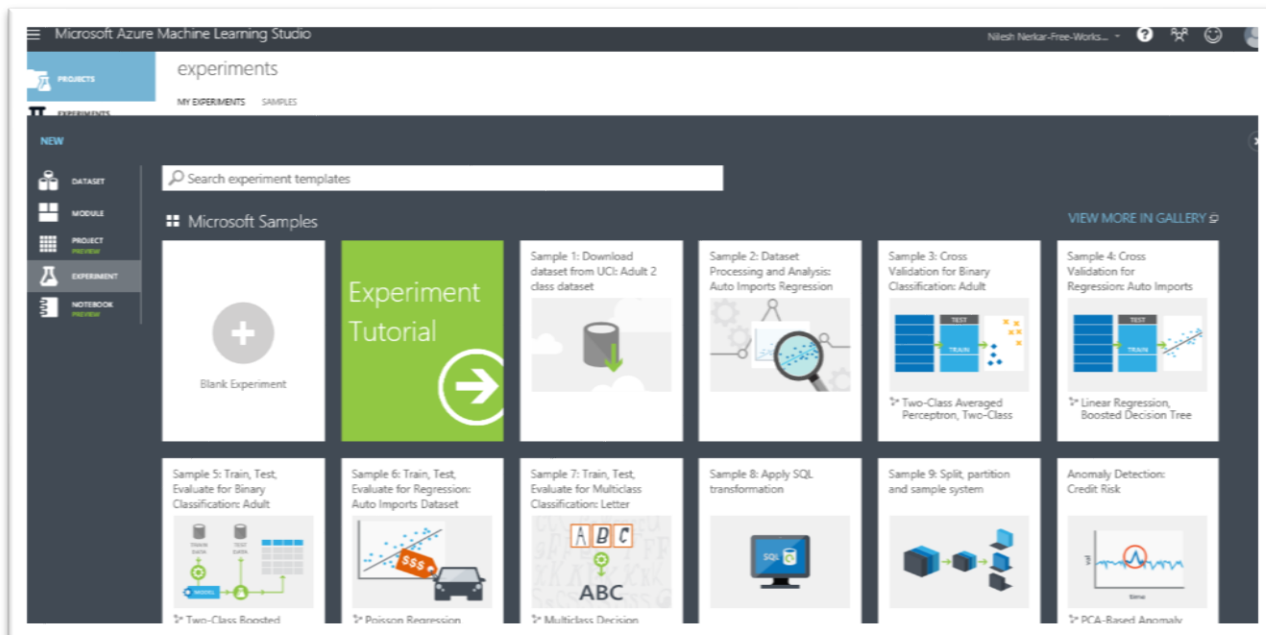


The following is the landing page of the studio:

A free workspace is been created for you if you select free plan, you can create an Experiment clicking on +NEW highlighted below.



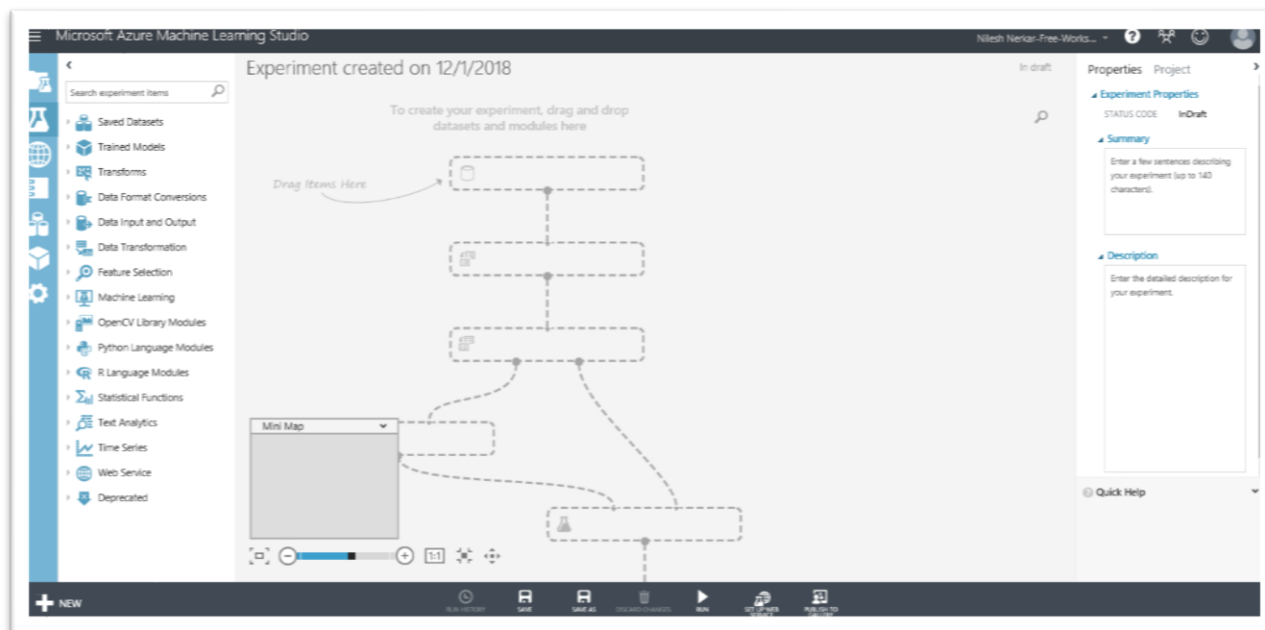
To start with, you can also open the basic tutorials present in the gallery as seen below or else create a new Blank Experiment:



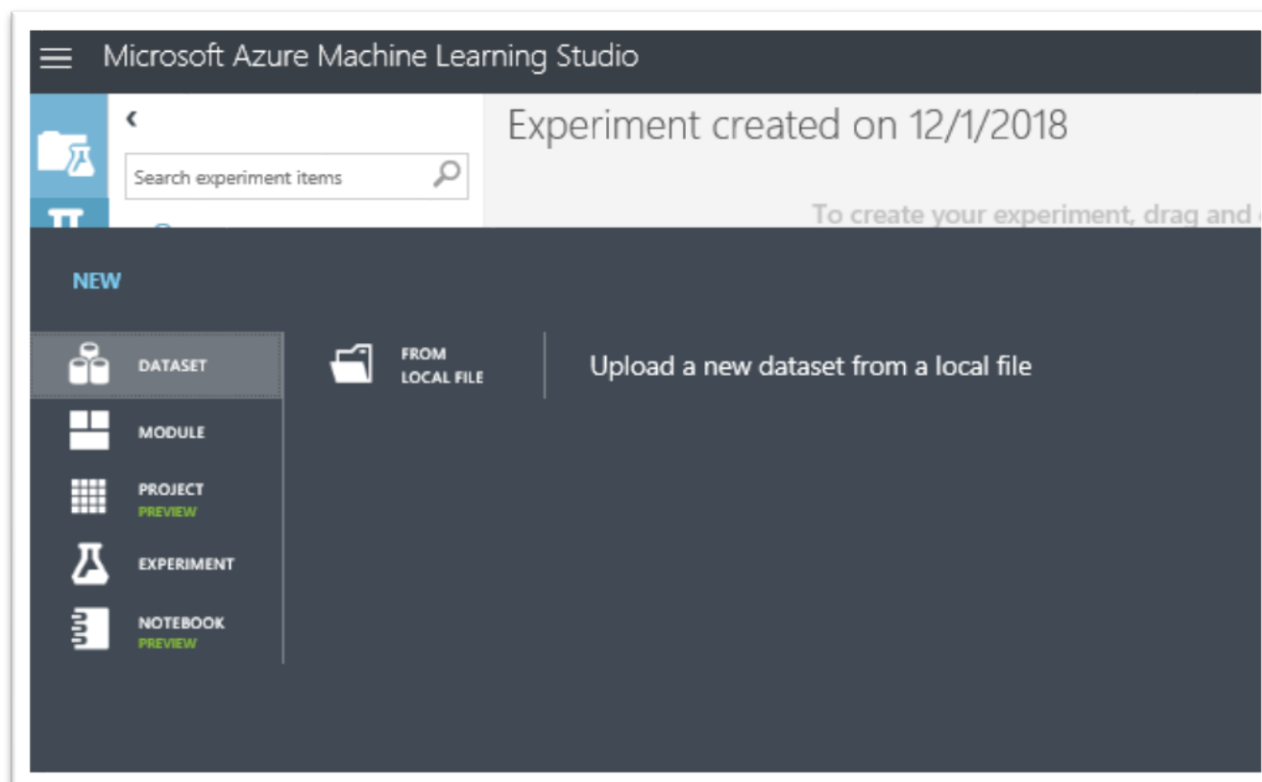
Let's Create a sample experiment for Titanic Survival Classification

You can download the data set from <https://www.kaggle.com/azeembootwala/titanic>

The following is the blank experiment page, where you can drag and drop modules from available ML Studio:



Data sets can be imported from using the following Dataset option available in the Studio:

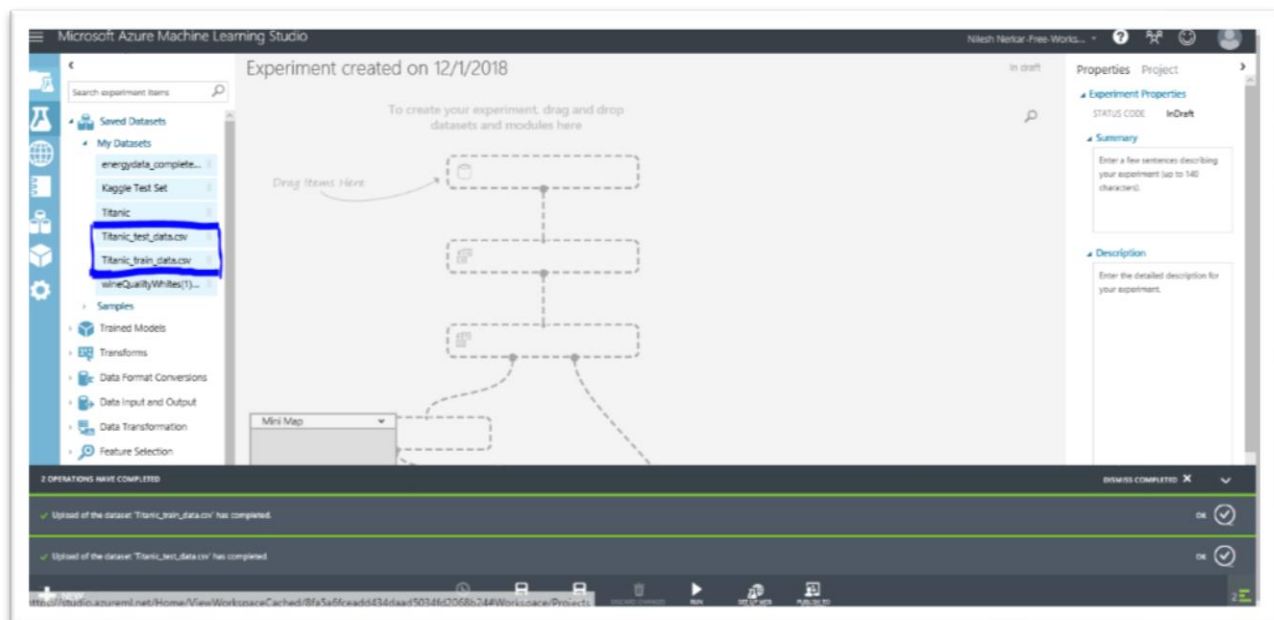


You can upload and rename the data set and also convert the type of the data set:

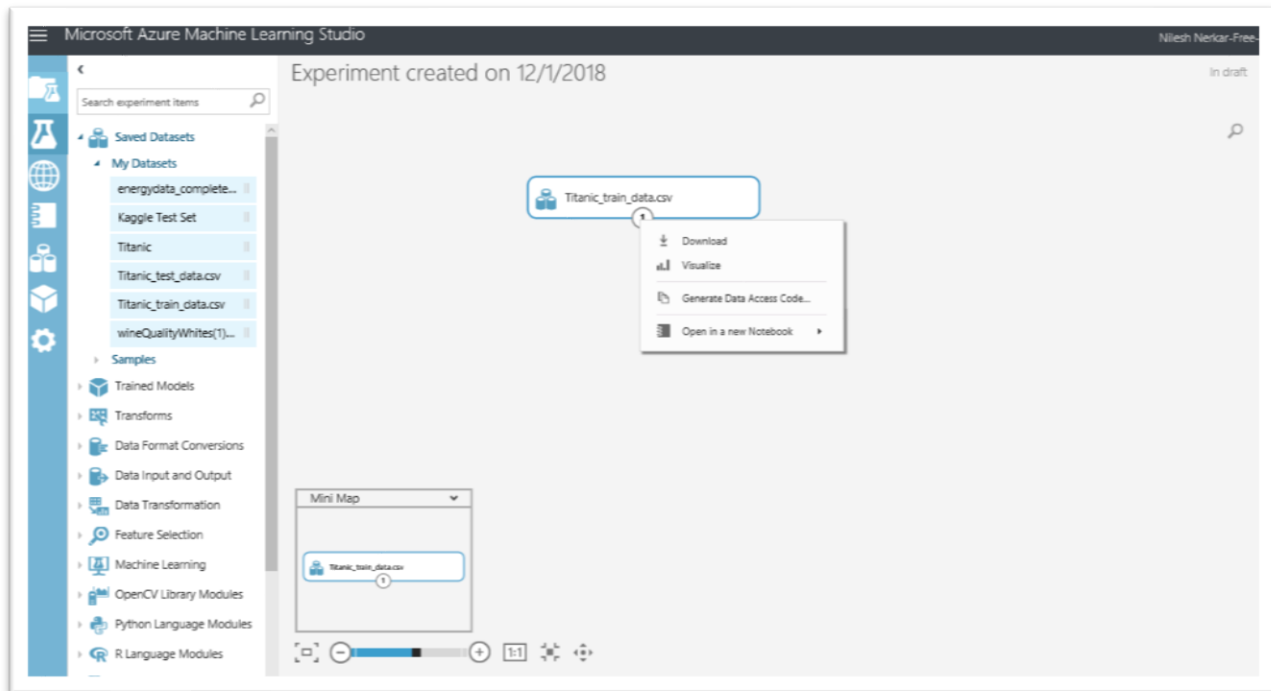
The screenshot shows a dialog box titled "Upload a new dataset" with a close button (X) in the top right corner. The dialog contains the following fields and options:

- SELECT THE DATA TO UPLOAD:** A text input field containing "C:\Users\Anuja\Downloads\train_data.csv" and a "Browse..." button.
- ☐ This is the new version of an existing dataset
- ENTER A NAME FOR THE NEW DATASET:** A text input field containing "Titanic_train_data.csv".
- SELECT A TYPE FOR THE NEW DATASET:** A dropdown menu showing "Generic CSV File with a header (.csv)" with a downward arrow.
- PROVIDE AN OPTIONAL DESCRIPTION:** An empty text input field.
- A circular confirmation button with a checkmark in the bottom right corner.

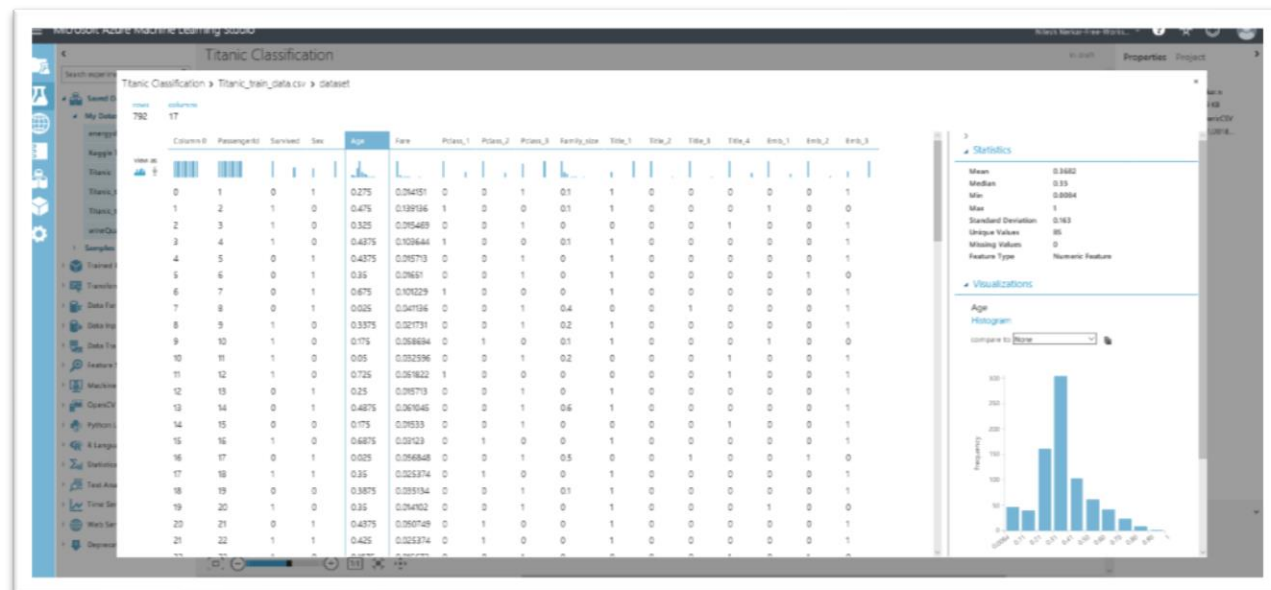
The imported data sets will be seen in the My Datasets under Saved Datasets:



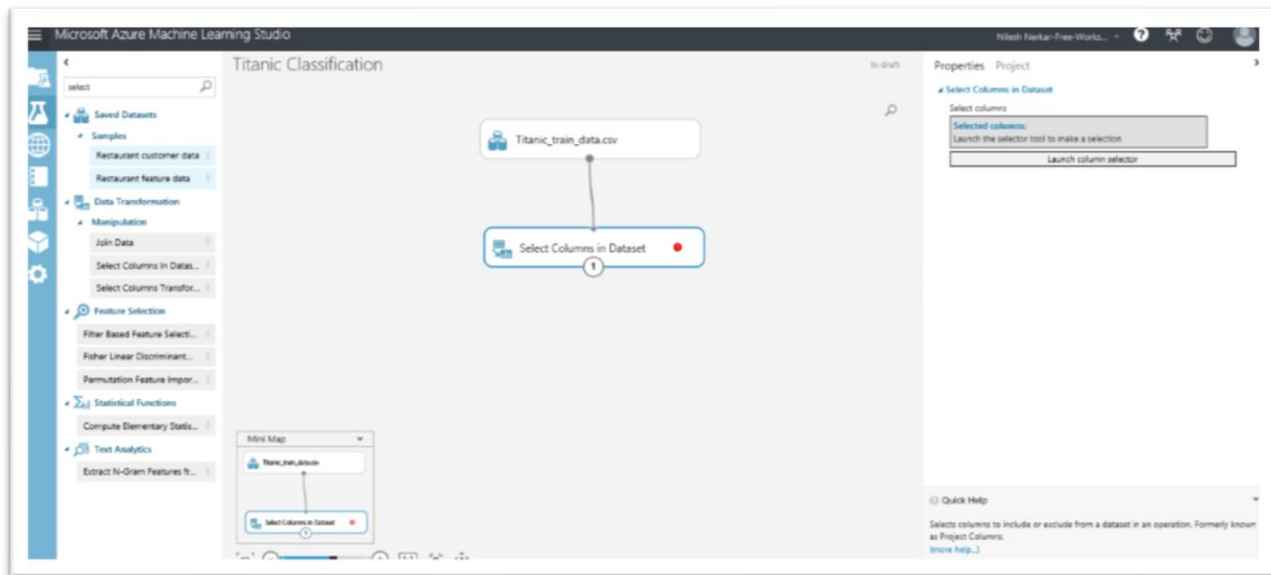
Drag the training dataset into the experiment page and you can visualize the features on one click:



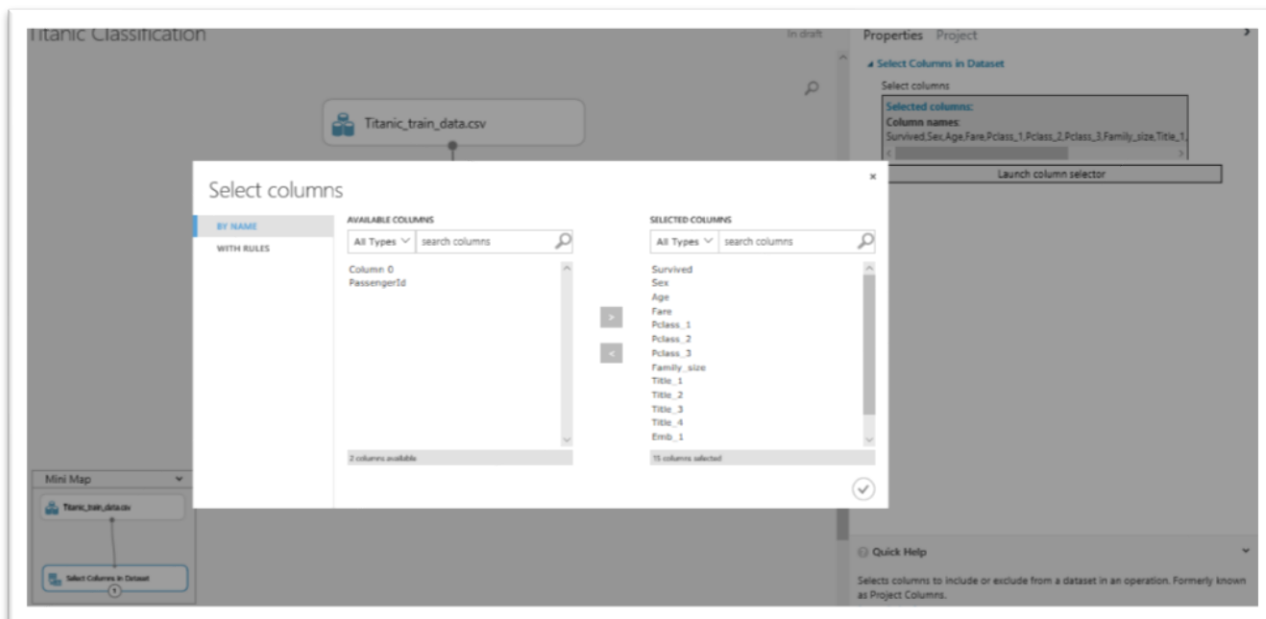
We can individually visualize the features and see the basic statistics:



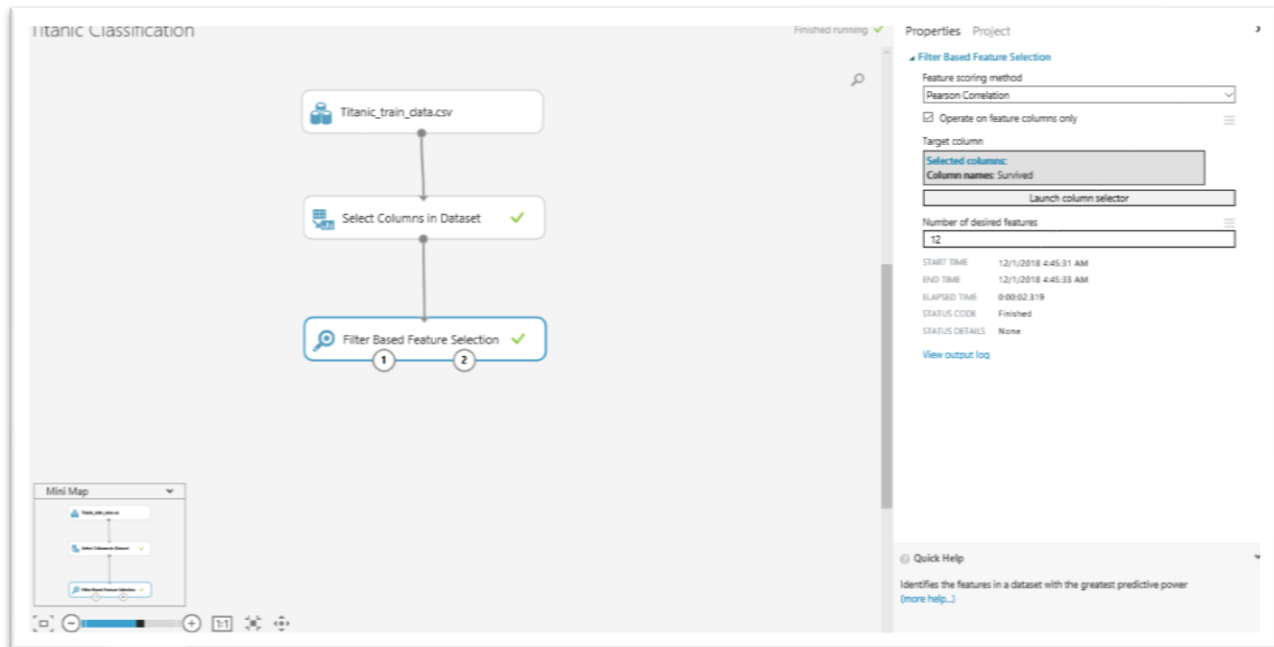
Deleting the unwanted columns using SELECT COLUMNS IN DATASET :
Click the launch column selector to select the columns



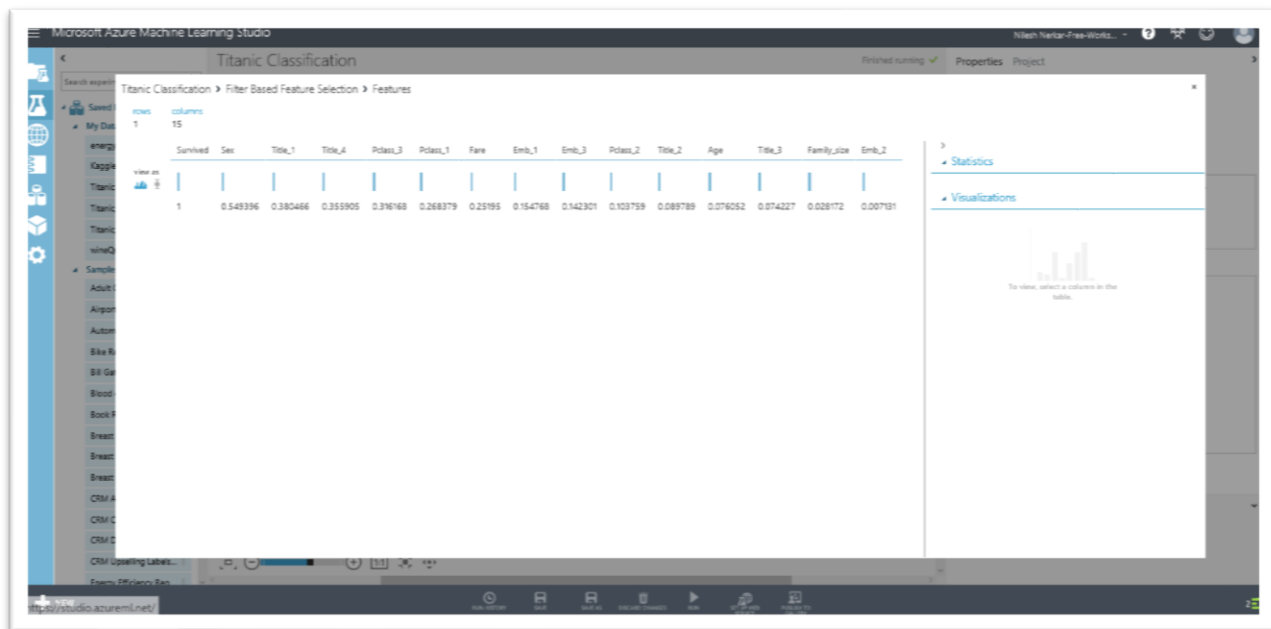
There are two types to select the columns by names and by rules, will go by the names:



Feature selection can be done by dragging the Filter Feature Selection and choosing the feature method from the drop-down box on the right and also the number of features:



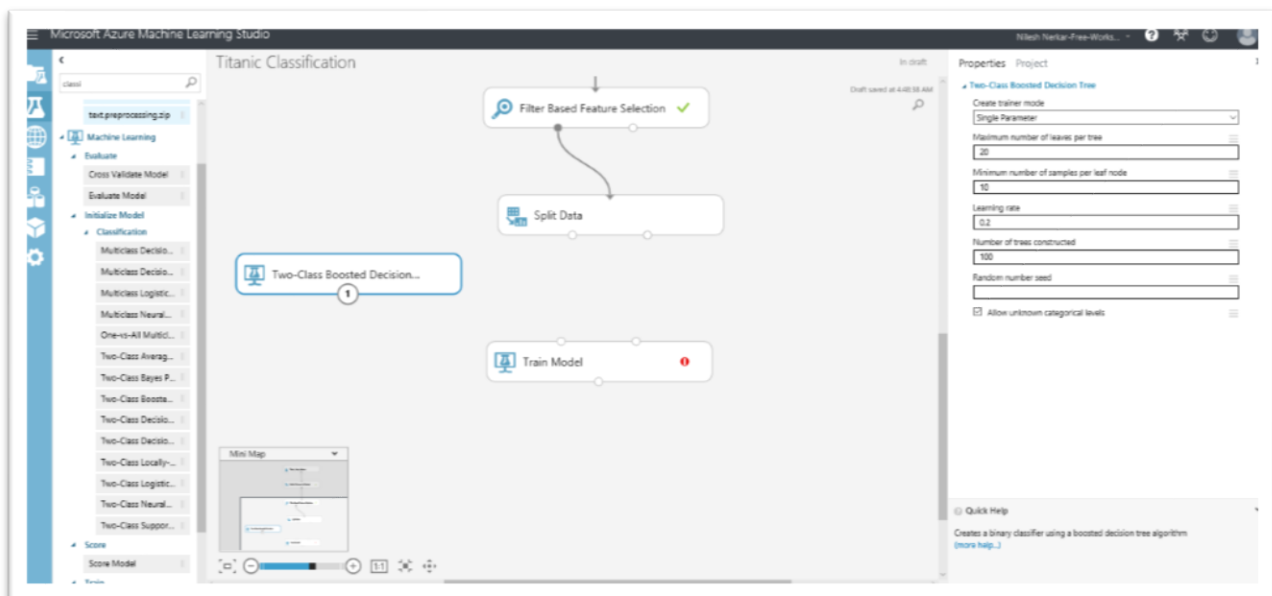
After running the module, we can visualize the scores for each column by clicking on the 2nd option of the Filter Based Feature Selection:



We can split the data into train and test using SLIT DATA also we can stratify the split based on our target:



To train we need to use a model from available model, we use here GBM along with a train module:



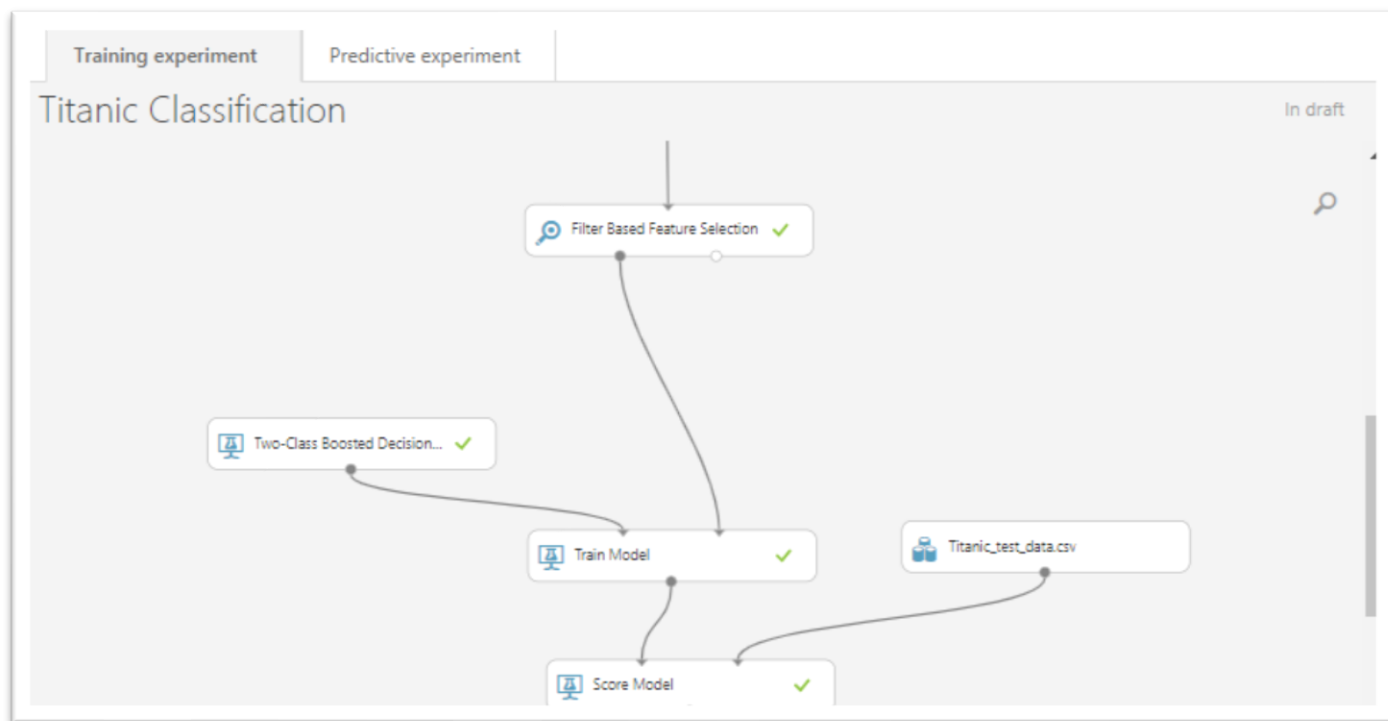
If you want to tune the parameters, we can set a parameter range for the model (highlighted)

The screenshot shows a workflow titled "Titanic Classification" in a machine learning interface. The workflow consists of three steps: "Filter Based Feature Selection" (highlighted with a green checkmark), "Split Data", and "Train Model" (highlighted with a red error icon). A "Two-Class Boosted Decision..." model is also shown. The "Properties" panel on the right is open for the "Two-Class Boosted Decision Tree" model, showing various parameters like "Maximum number of leaves per tree" and "Learning rate".

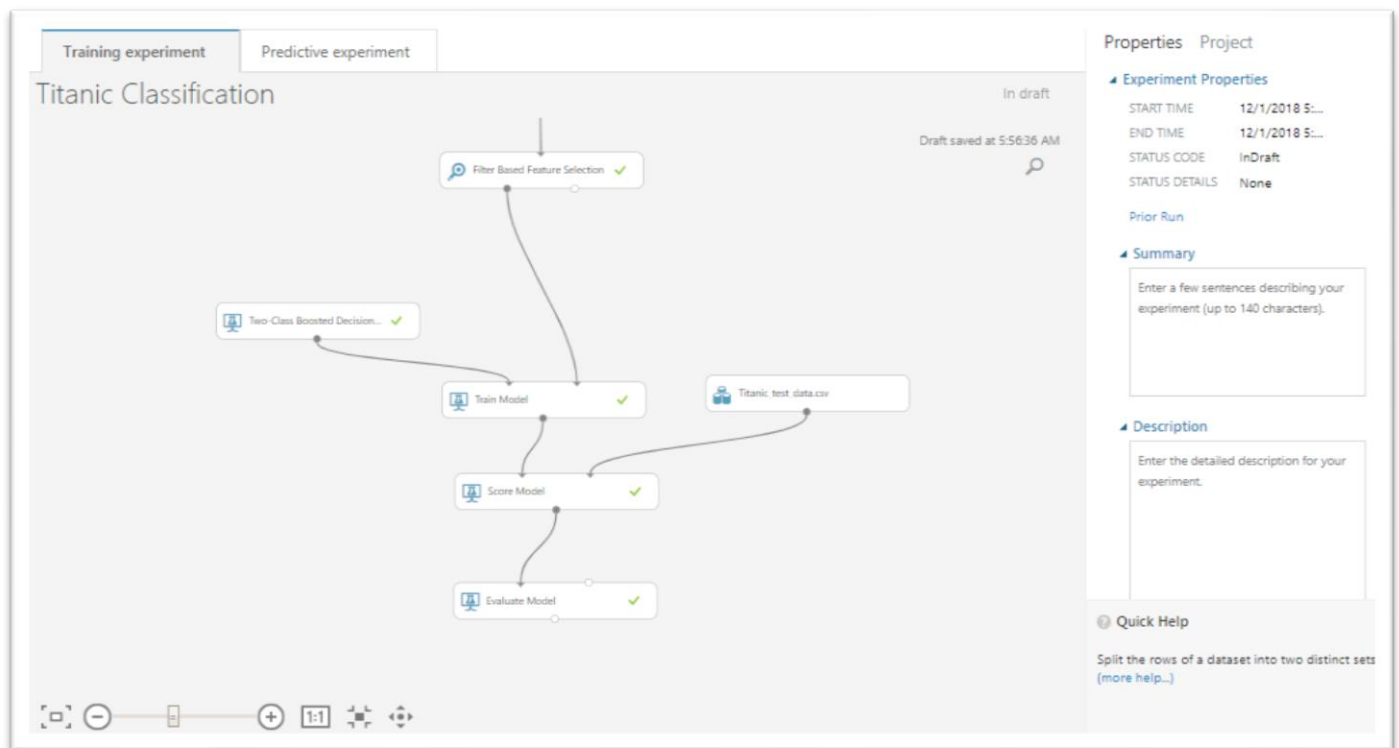
We need to specify the target variable to train the model, here we have selected “survived”:

The screenshot shows the same workflow, but now the "Train Model" step is active, and the "Properties" panel on the right is open for the "Train Model" step. The "Label column" is set to "Survived". A "Mini Map" is visible in the bottom left corner.

Since we have testing dataset available, we won use SPLIT DAT here, and continue with the selected features:



After training the model we can score and evaluate our model using following:

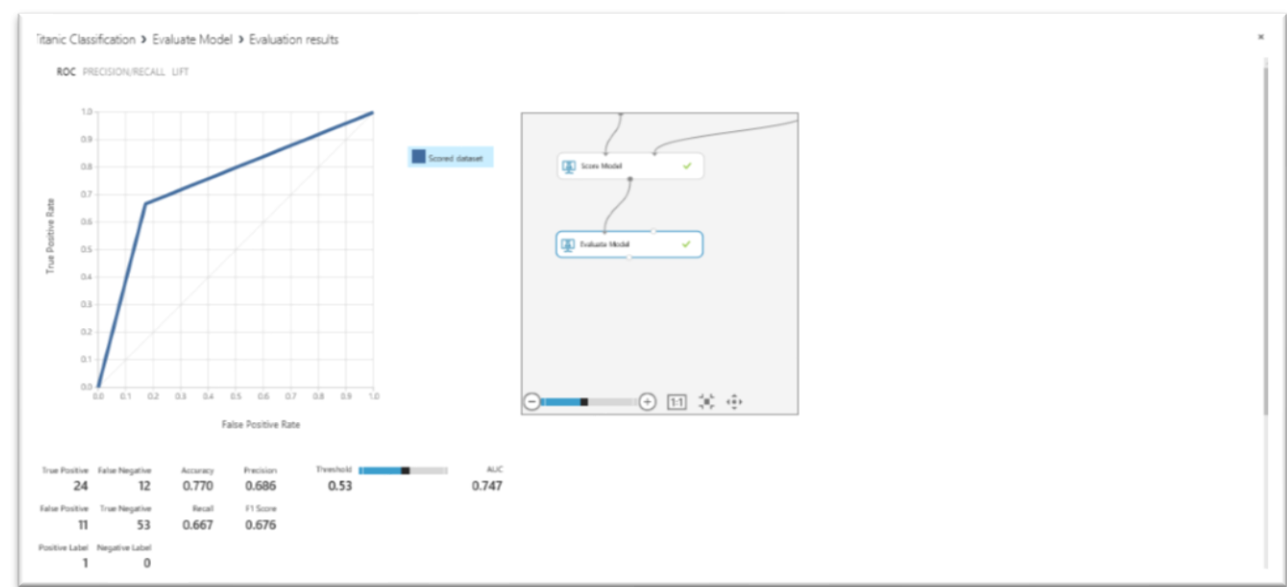


On click of SCORE MODEL we can visualize the Scored Labels and Scored Probabilities:

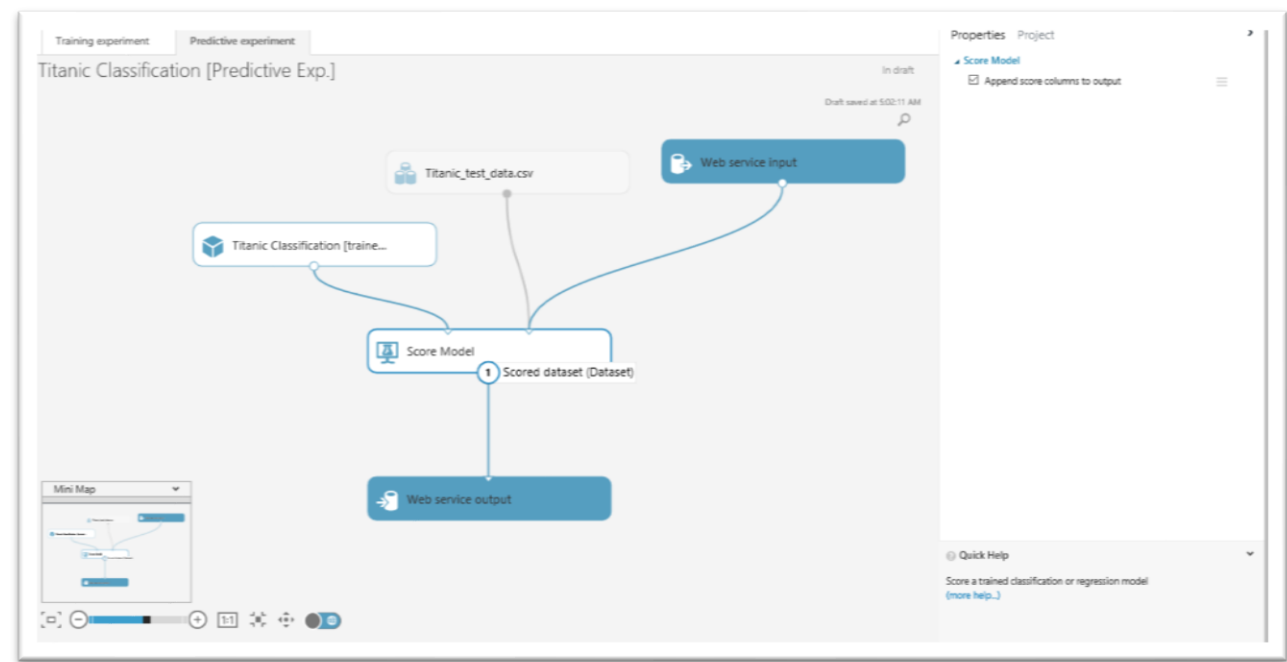
The screenshot shows the 'Scored dataset' table in the Azure Machine Learning Studio interface. The table has 100 rows and 19 columns. The columns are: Fare, Pclass_1, Pclass_2, Pclass_3, Family_size, Title_1, Title_2, Title_3, Title_4, Emb_1, Emb_2, Emb_3, Scored Labels, and Scored Probabilities. The table is sorted by 'Scored Labels' in descending order. The first few rows are:

	Fare	Pclass_1	Pclass_2	Pclass_3	Family_size	Title_1	Title_2	Title_3	Title_4	Emb_1	Emb_2	Emb_3	Scored Labels	Scored Probabilities
Tit	0.050749	0	1	0	0	1	0	0	0	0	0	1	0	0.193256
Tit	0.135753	0	0	1	1	0	0	0	1	0	0	1	1	0.759074
wir	0.059914	1	0	0	0	1	0	0	0	0	1	0	0	0.193256
Sam	0.015412	0	0	1	0	1	0	0	0	0	0	1	0	0.193256
Adi	0.025374	0	1	0	0	1	0	0	0	0	0	1	0	0.193256
Arp	0.05061	1	0	0	0	0	1	0	0	0	0	1	1	0.759074
Aut	0.016949	0	0	1	0	1	0	0	0	0	0	1	1	0.759074
014	0.01411	0	0	1	0	1	0	0	0	1	0	0	0	0.193256
Blk	0.047138	0	0	1	0.2	1	0	0	0	0	0	1	1	0.759074
Blk	0.025374	0	1	0	0	1	0	0	0	0	0	1	0	0.193256
Blo	0.051237	0	1	0	0.2	1	0	0	0	0	0	1	1	0.759074
Boo	0.234224	1	0	0	0.3	0	0	1	0	0	0	1	0	0.193256
Bre	0.016623	0	0	1	0.1	0	0	1	0	1	0	0	0	0.193256
Bre	0.013614	0	0	1	0	1	0	0	0	0	0	1	0	0.193256
Bre	0.015176	0	0	1	0	1	0	0	0	0	0	1	0	0.193256

On click of EVALUATE MODEL we can see the Confusion matrix:



On click of Set up a Web Service we can create a predictive experiment with input and output feature selection for the REST API:



Since we only need the Target scored labels, we can select those columns in the output and provide only those features which are been trained using SELECT COLUMNS IN DATASET:

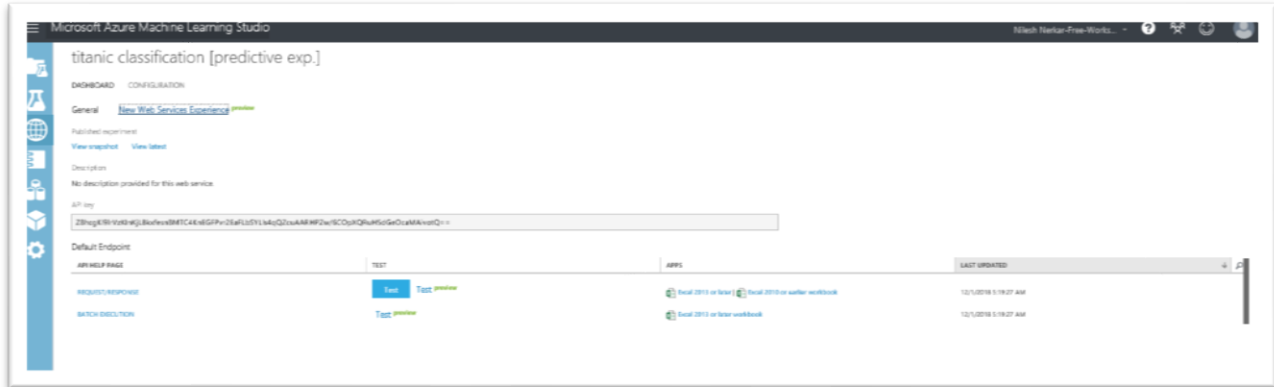


All the web service created can be seen under WEB SERVICES:

The screenshot shows the 'web services' page in the Microsoft Azure Machine Learning Studio. The left sidebar contains navigation links: PROJECTS, EXPERIMENTS, WEB SERVICES (selected), NOTEBOOKS, DATASETS, TRAINED MODELS, and SETTINGS. The main area displays a table of web services.

NAME	CREATED ON	PROJECT
<input checked="" type="checkbox"/> Titanic Classification [Predictive Exp.]	12/1/2018 5:10:42 AM	None
<input type="checkbox"/> Air Plane Delay Prediction Final [Predictive Exp.]	11/30/2018 2:50:58 AM	None
<input type="checkbox"/> Air Plane Delay Prediction [Predictive Exp.]	11/30/2018 2:30:35 AM	None
<input type="checkbox"/> Sample 1: Download dataset from UCI Adult 2 class dataset	11/25/2018 1:43:24 AM	None
<input type="checkbox"/> Income Prediction [Predictive Exp.]	11/25/2018 1:19:37 AM	None
<input type="checkbox"/> Income Prediction [Predictive Exp.]	11/22/2018 12:19:29 AM	None

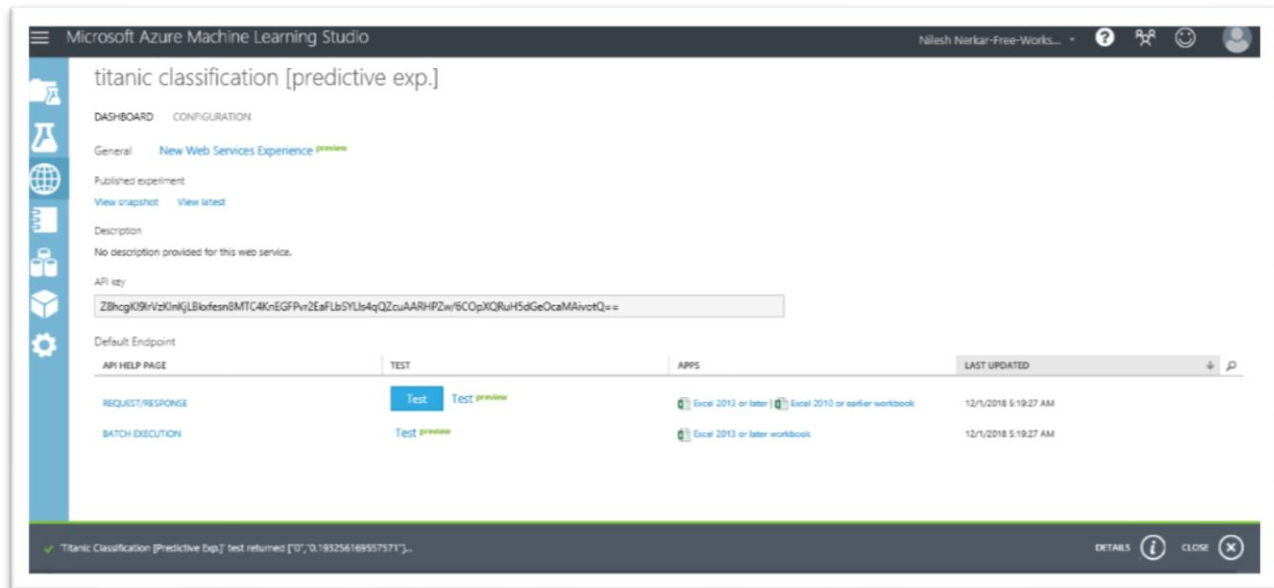
After Deploying the model using one click on DELPOY option, we can see the following, were we can export our prediction to excel or test using the available UI (TEST)



The following is the UI of the ML Studio:



We can see the output here itself:



By clicking New Web Services Experiences, we can use the AZURE's web service which has a better UI, We can also create a Rest API using the information provided here:

