

Regression with Shap Explainer

- Data 1 : Duplicate Regression data

data

	price	bedrooms	bathrooms	sqft_living	sqft_lot	floors	waterfront	view	condition	sqft_above	sqft_basement	yr_renovated	city	statezip	country	Year
yr_built																
1955	313000.0	3	1.50	1340	7912	1.5	0	0	3	1340	0	2005	36	62	0	1955
1921	2384000.0	5	2.50	3650	9050	2.0	0	4	5	3370	280	0	35	58	0	1921
1966	342000.0	3	2.00	1930	11947	1.0	0	0	4	1930	0	0	18	26	0	1966
1963	420000.0	3	2.25	2000	8030	1.0	0	0	4	1000	1000	0	3	7	0	1963
1976	550000.0	4	2.50	1940	10500	1.0	0	0	4	1140	800	1992	31	31	0	1976
...
1955	313000.0	3	1.50	1340	7912	1.5	0	0	3	1340	0	2005	36	62	0	1955
1955	313000.0	3	1.50	1340	7912	1.5	0	0	3	1340	0	2005	36	62	0	1955
1955	313000.0	3	1.50	1340	7912	1.5	0	0	3	1340	0	2005	36	62	0	1955
1955	313000.0	3	1.50	1340	7912	1.5	0	0	3	1340	0	2005	36	62	0	1955
1955	313000.0	3	1.50	1340	7912	1.5	0	0	3	1340	0	2005	36	62	0	1955

4606 rows × 16 columns

- Waterfall Charts

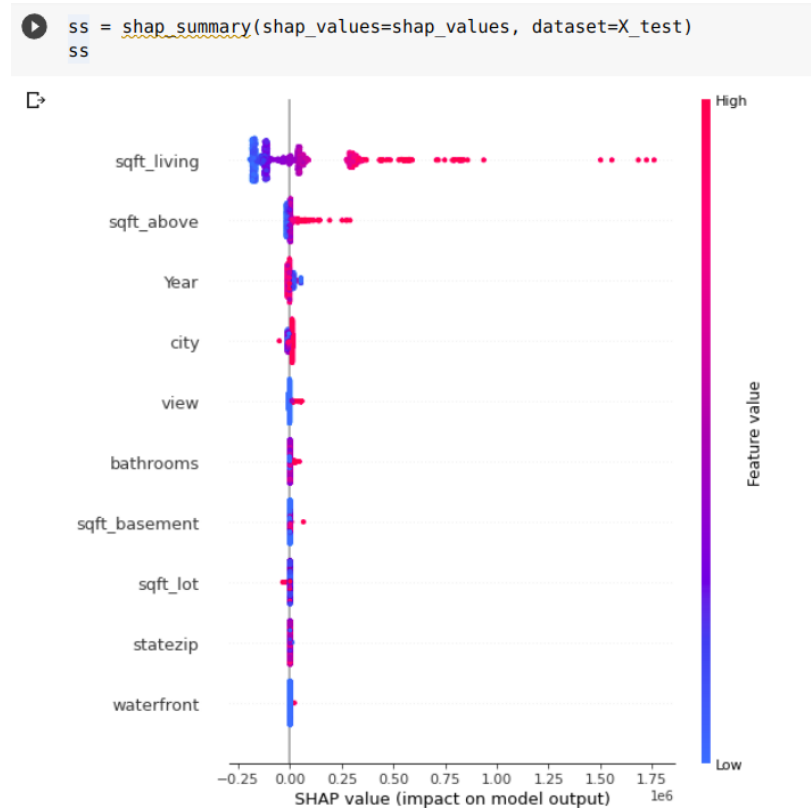
- For first instance in test data:



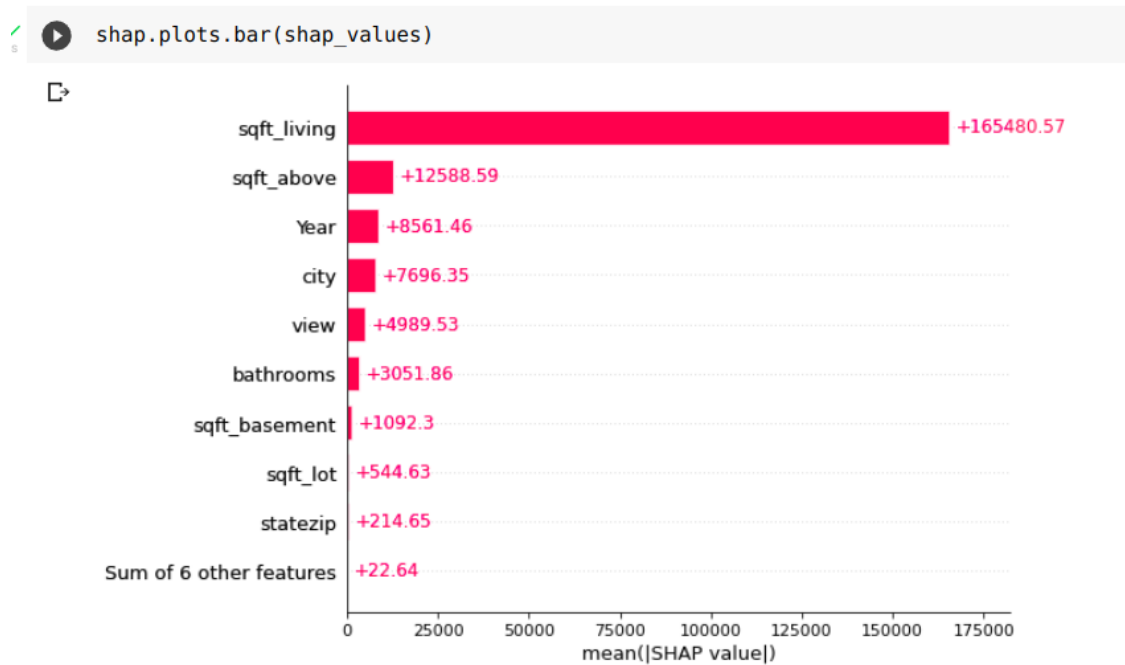
- For third instance in test data:



- Summary Plots of Feature Importance :



- **Bar Plot For Feature Importance:**



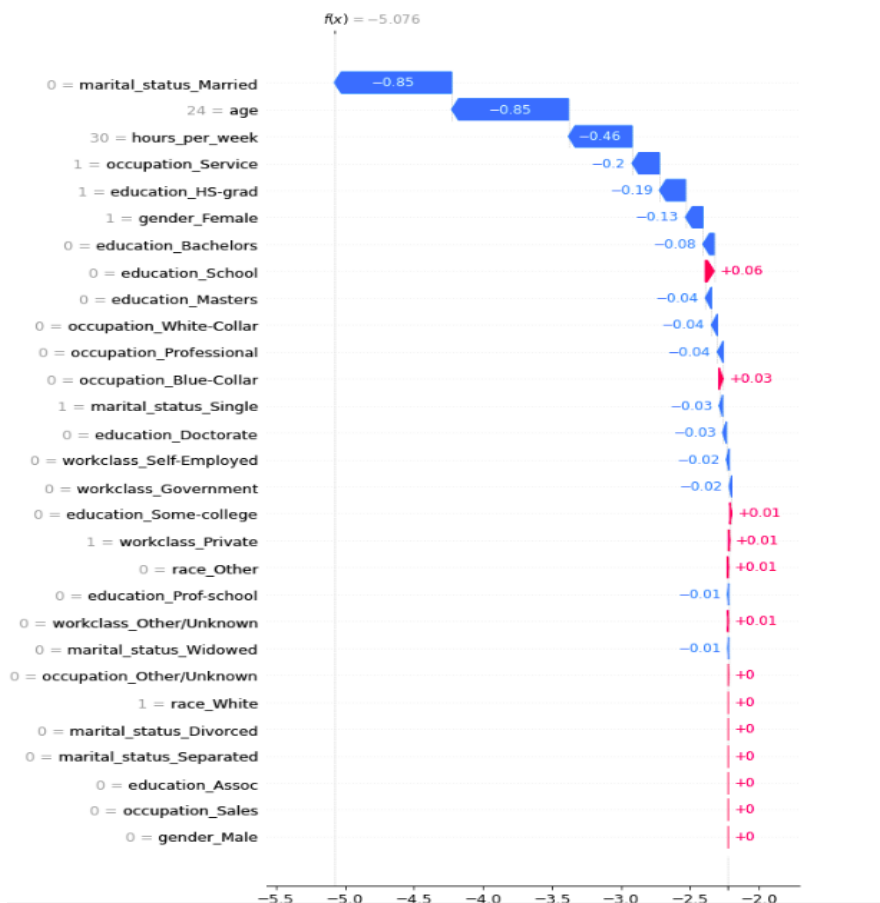
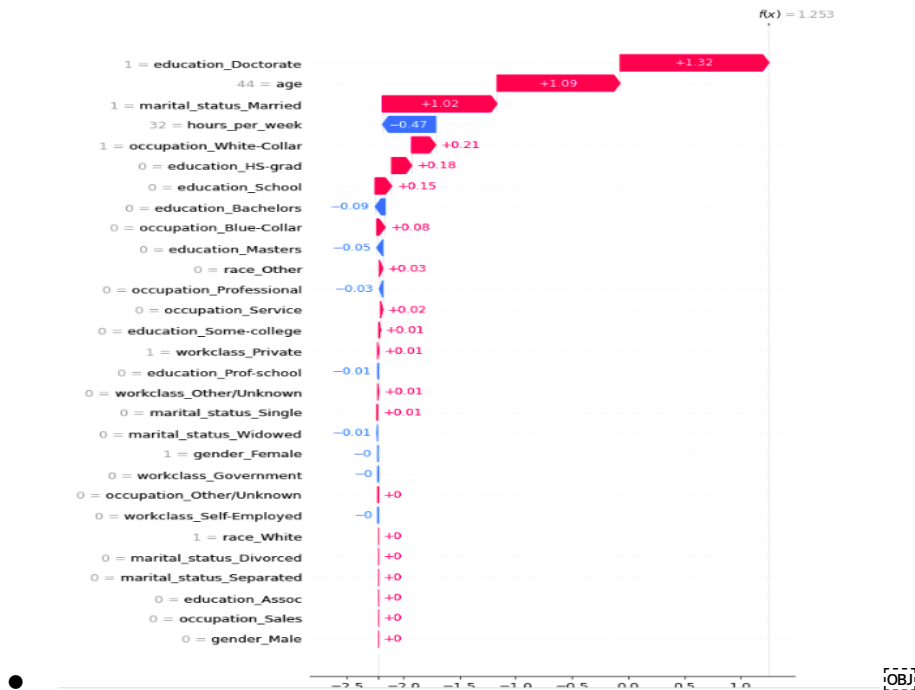
Classification with Shap Explainer

Data: Income.csv

- **Data Description:**

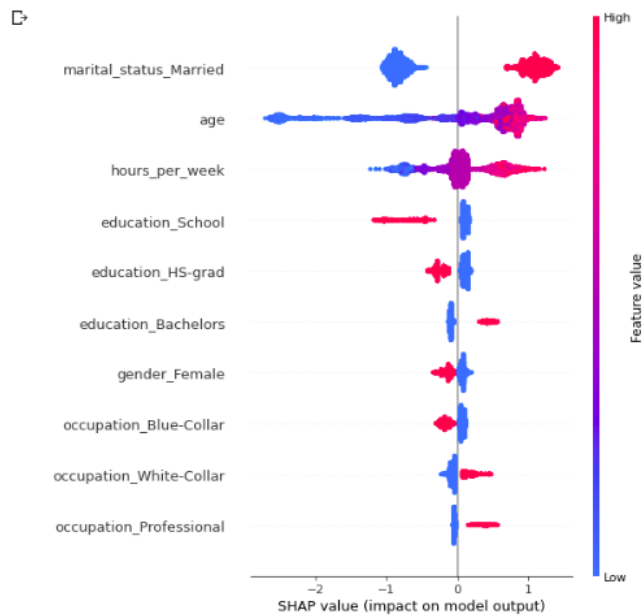
```
[115] data.columns
Index(['age', 'hours_per_week', 'income', 'workclass_Government',
       'workclass_Other/Unknown', 'workclass_Private',
       'workclass_Self-Employed', 'education_Assoc', 'education_Bachelors',
       'education_Doctorate', 'education_HS-grad', 'education_Masters',
       'education_Prof-school', 'education_School', 'education_Some-college',
       'marital_status_Divorced', 'marital_status_Married',
       'marital_status_Separated', 'marital_status_Single',
       'marital_status_Widowed', 'occupation_Blue-Collar',
       'occupation_Other/Unknown', 'occupation_Professional',
       'occupation_Sales', 'occupation_Service', 'occupation_White-Collar',
       'race_Other', 'race_White', 'gender_Female', 'gender_Male'],
      dtype='object')
```

- Waterfall Plots for first and 2000 th instance of the test data:



- **Summary Plot:**

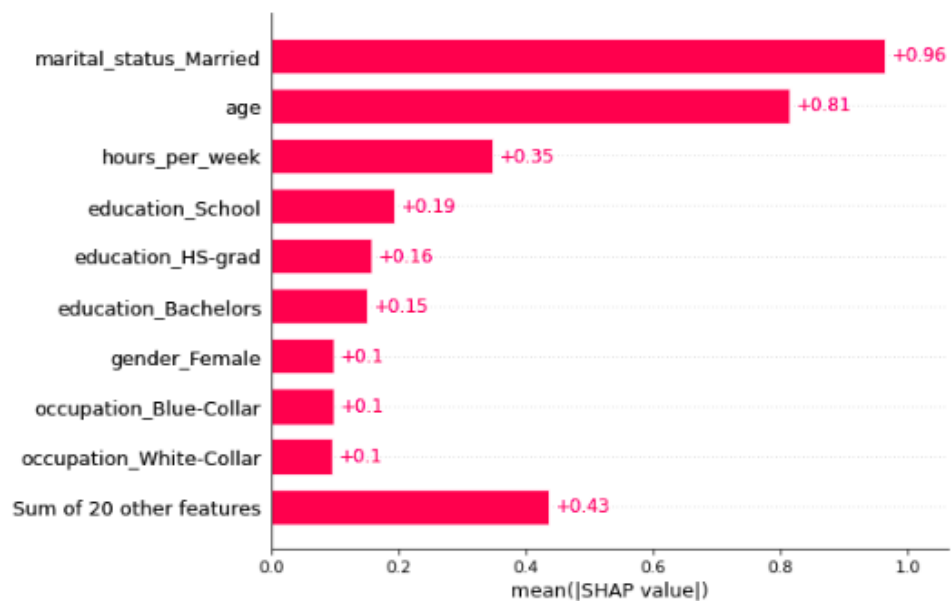
```
ssc = shap_summary(shap_values=shap_values_sc, dataset=X_test_sc)  
ssc
```



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- **Bar Plot**

```
shap.plots.bar(shap_values_sc)
```



Counterfactuals generation

Mace for CounterFactual Generation on income data

- Data 1: Fintech data
- Model: KNN

#	OPM	debt_ratio	debt_to_equity	Payables Turnover	Accounts Receivable Turnover	Openover	Volume	label	
Query	11.47	0.08	0.33	16.61	5.45	15.36	8006.0	23798.0	-1
CF 1	11.47	0.08	0.33	16.61	5.45	15.36	7192.6875	23798.0	1
CF 2	11.47	0.0794	0.33	16.61	5.45	15.36	7192.6875	23798.0	1
CF 3	11.47	0.08	0.3094	16.61	5.45	15.36	7192.6875	23798.0	1
CF 4	11.47	0.08	0.33	16.7938	5.4944	15.36	8006.0	25551.71881	-1
CF 5	11.6856	0.08	0.33	16.5831	5.45	15.5375	8006.0	17150.375	1

- Model : D.Tree

#	tic	OPM	debt_ratio	debt_to_equity	R.A.T.A	Payables Turnover	Accounts Receivable Turnover	Openover	Volume	label					
Query	8.0	11.47	0.08	0.33	72.24	19.0	1.26	0.0	0.0	16.61	5.45	2456.08006	0.0266153	23798.0	-1
CF 1	8.0	11.47	0.08	0.33	72.24	19.0	1.26	0.0	0.0	16.61	5.45	2456.08006	0.0266153	26960.8125	-1
CF 2	8.0	11.47	0.08	0.33	72.24	18.9844	1.26	0.0	0.0	16.61	5.45	2456.08006	0.0266153	26960.8125	-1
CF 3	8.0	11.3988	0.08	0.33	72.24	19.0	1.26	0.0	0.0	16.61	5.45	2456.08006	0.0266153	26960.8125	-1
CF 4	14.9375	11.47	0.075	0.33	72.24	19.0	1.27280	0.035	0.2659	16.61	5.45	2336.012058	0.210782	23798.0	-1
CF 5	8.0	11.47	0.75751	0.456273	27069.0	1.26	0.02970	0.2659	16.31	5.47381	650.12606	0.0262722	23798.0	-1	

- Model : LGBM

#	R.A.T.A	Accounts Receivable Turnover	Openover	Adj Close	Volume	label
Query	19.0	5.45	8006.0	26.6153	23798.0	1
CF 1	19.0	5.45	12346.0	57.7759	38537.0	-1
CF 2	19.6725	6.965	8023.5625	47.389	38537.0	-1
CF 3	19.0	6.965	14082.0	44.7923	43450.0	-1

- Model : Logistic

#	tic	DYCSN	debt_rate	debt_to_equity	N.R.A.T.A	cur_ratio	Accounting	Receivable	Turnover	Label		
Query	8.0	0.0	0.08	0.33	72.24	19.0	1.26	5.45	15.36	2456.0	26.6153	1
CF 1	8.0	0.0	0.08	0.33	72.24	19.0	1.26	5.45	15.36	0.0	26.6153	-1
CF 2	8.0	0.0	0.08	0.3094	72.24	19.0	1.26	5.45	15.36	0.0	26.6153	-1
CF 3	9.0625	0.0	0.08	0.33	72.24	19.0	1.26	5.45	15.36	0.0	26.6153	-1
CF 4	8.0	0.1053	1.5731	0.33	68.4312	18.2975	1.2738	5.1094	14.4	2456.0	1450.5703	1