

Manual: Regression Model Explainer

1. Create a Model

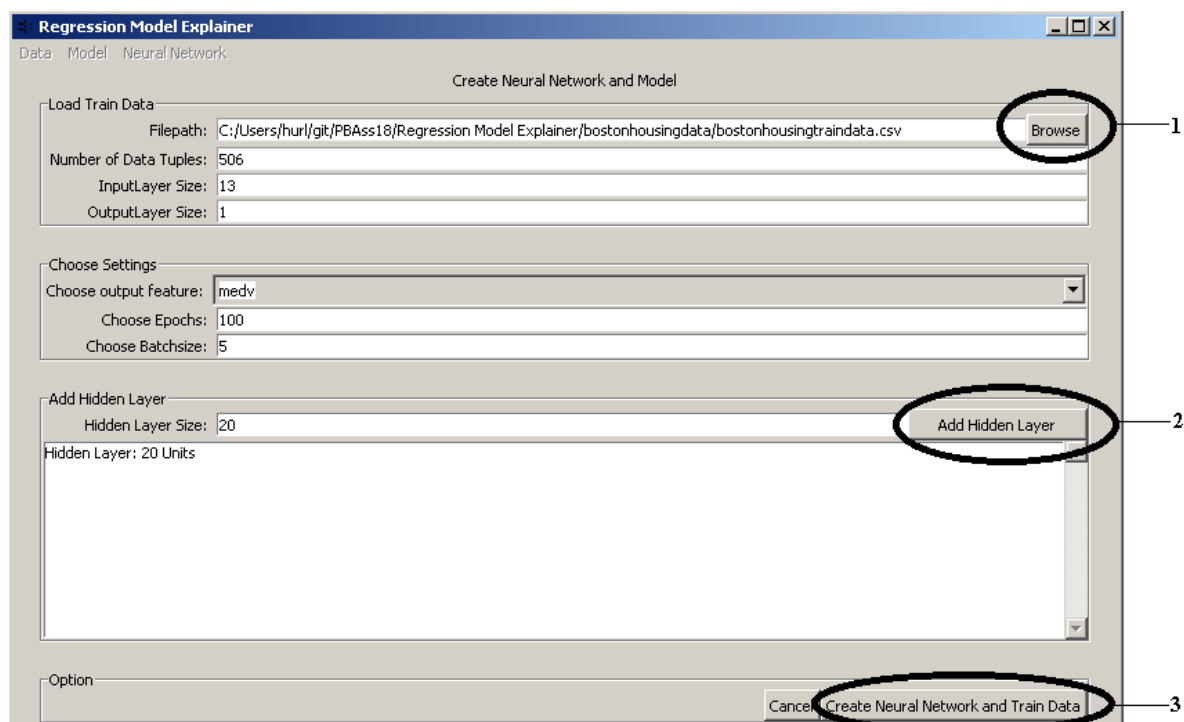
- Press Button “Create Model” on the main screen

or

Go to: Neural Network->Create/Train Neural Network

Set Model specification and train:

- Press Browse (1) and set a train data set
(e.g. Regression Model Explainer\bostonhousingdata\bostonhousingtraindata.csv)
- Choose output feature in dropdown box (e.g. medv)
- Choose Epochs (e.g. 100)
- Choose Batchsize (e.g. 5)
- Add Hidden Layer: input positive number in the field (e.g. 20) and press Button Add Hidden Layer (2)
- Press Create Neural Network and Train Data Button (3)
- After this the model gets trained this can take some minutes depending on the data and specification, then the train information gets shown with pressing ok you get back to the main screen.



2. Explain the Model

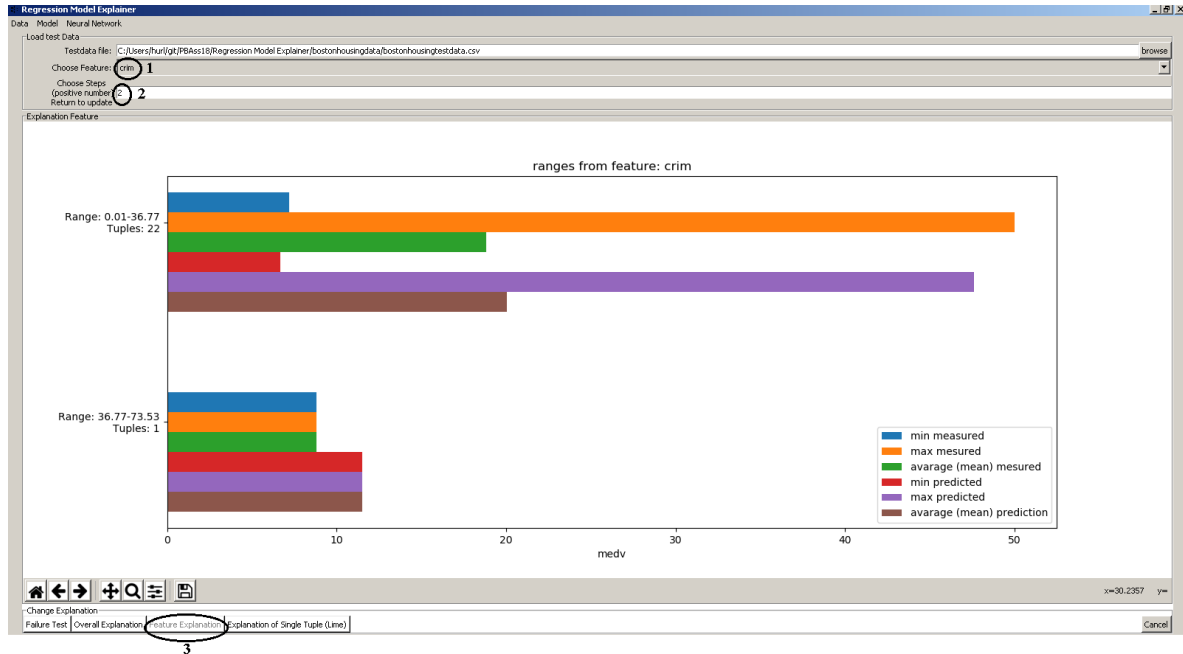
If a model is trained:

- Press Button “Explain Model” on the main screen
Or
Go to: Model ->Explanation

Failure Test:

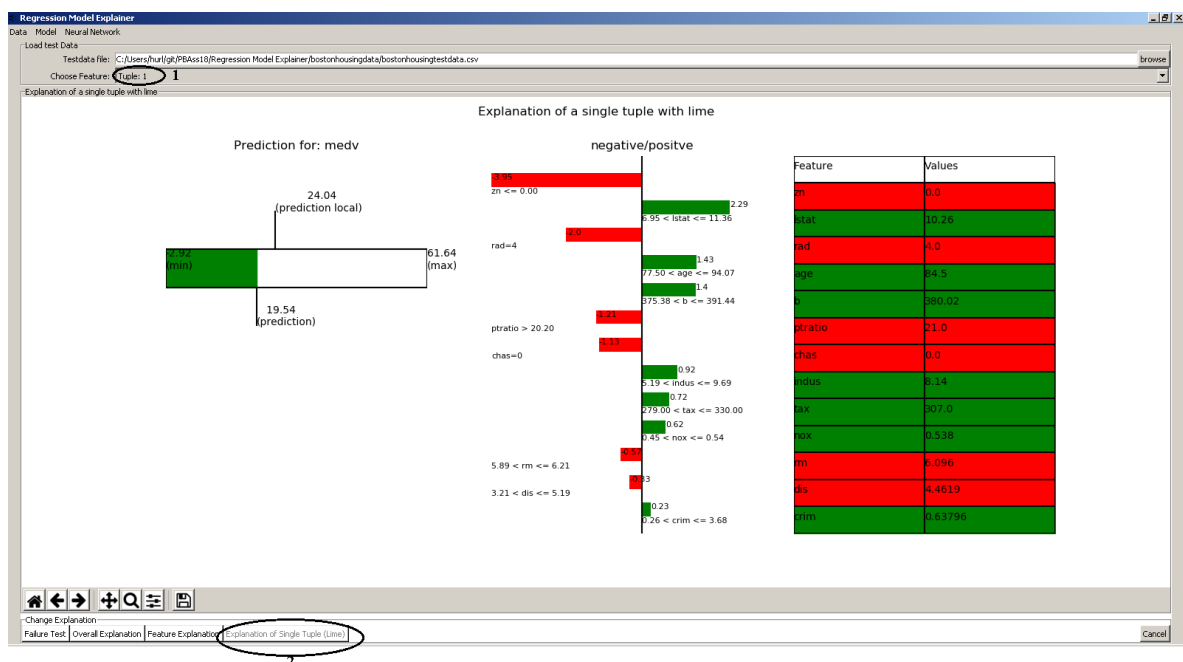
Feature Explanation:

- The Feature Explanation Button (3) should be chosen
- The output feature can be changed at the Choose Feature dropdown box (1)
- The number of splits can be chosen with choose steps (2), fill in a positive number and press enter to update



Explanation of Single Tuple (Lime):

- The Explanation of Single Tuple (Lime) Button should be chosen (2)
- The tuple can be changed at choose feature dropdown box (1)



3. Neural Network Tests

Existing model got reset with the following tests!

Performance Test:

- Go to: Neural Network -> Neural Network Performance test
- Choose test data and fill fields and add hidden layer like in “Set Model specification and train” under “Create a Model” topic.
- Press Start Performance Test button
- The performance test takes a few moments, after this press the show Result Button to show the performance test graph

Evaluate Neural Network with KerasRegressor(10-fold cross validation):

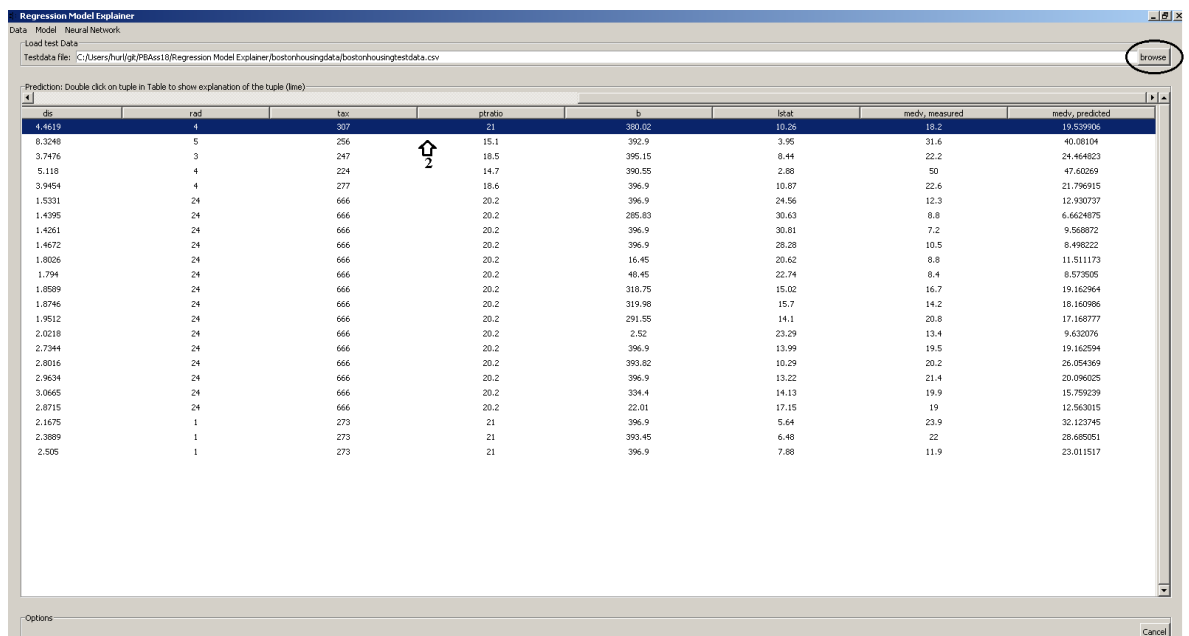
- Go to: Neural Network -> Evaluate Neural Network with KerasRegressor(10-fold cross validation)
- Choose test data and fill fields and add hidden layer like in “Set Model specification and train” under “Create a Model” topic.
- Press Evaluate Neural Network button
- The test takes a few moments (trains 10 times with the data) and show the means of the MSE and the RMSE of this test.

4. Predictions:

A model must be created or loaded!

Predict data set:

- Go to: Neural Network -> Predict TestData
- Press browse (1) to set test data
(e.g. Regression Model Explainer\bostonhousingdata\bostonhousingtestdata.csv)
- Double click on a row (2) to change the view to “Explanation of Single Tuple (Lime)” and shows the explanation of the row



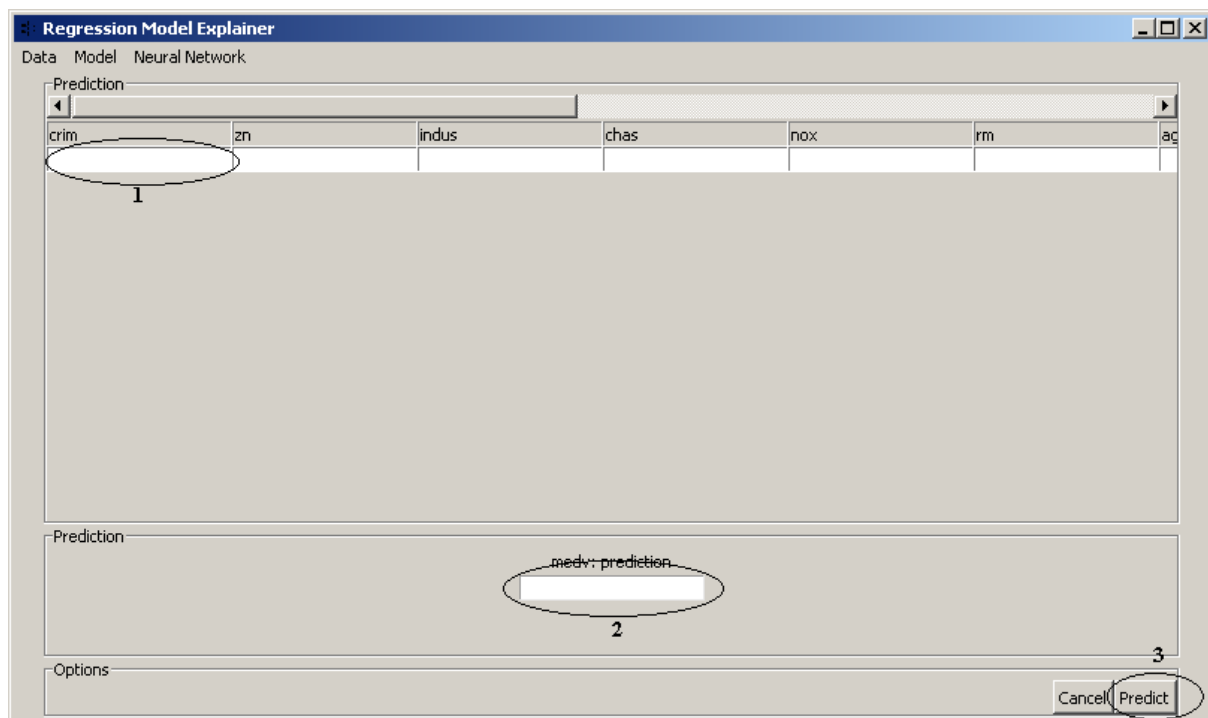
The screenshot shows the 'Regression Model Explainer' application window. At the top, there's a 'Data' tab and a 'Model' dropdown set to 'Neural Network'. Below this is a 'Load test Data' section with a text field containing the file path: 'C:\Users\hurl\git\PSA\src\Regression Model Explainer\bostonhousingdata\bostonhousingtestdata.csv'. To the right of this field is a 'browse' button, labeled with a circled '1'. Below the file path is a 'Prediction: Double click on tuple in Table to show explanation of the tuple (line)' instruction. The main area is a table with columns: 'ds', 'rad', 'tax', 'ptratio', 'b', 'lstat', 'medv, measured', and 'medv, predicted'. The first row is highlighted in blue. A mouse cursor is hovering over the first row, and a circled '2' is placed over the first row, indicating where to double-click. The table contains 20 rows of data. At the bottom left, there is an 'Options' button, and at the bottom right, there is a 'Cancel' button.

ds	rad	tax	ptratio	b	lstat	medv, measured	medv, predicted
4.4619	4	307	21	380.02	10.26	18.2	19.339906
8.3248	5	256	15.1	392.9	3.95	31.6	40.00104
3.7476	3	247	18.5	395.15	8.44	22.2	24.464823
5.118	4	224	14.7	390.55	2.88	50	47.60269
3.9454	4	277	18.6	396.9	10.87	22.6	21.796915
1.5331	24	666	20.2	396.9	24.56	12.3	12.930737
1.4395	24	666	20.2	285.83	30.63	8.8	6.6624875
1.4261	24	666	20.2	396.9	30.81	7.2	9.568872
1.4672	24	666	20.2	396.9	28.28	10.5	8.498222
1.8026	24	666	20.2	16.45	20.62	8.8	11.511173
1.794	24	666	20.2	48.45	22.74	8.4	8.573505
1.8589	24	666	20.2	318.75	15.02	16.7	19.162964
1.8746	24	666	20.2	319.98	15.7	14.2	18.165986
1.9512	24	666	20.2	291.55	14.1	20.8	17.168777
2.0218	24	666	20.2	2.52	23.29	13.4	9.632076
2.7344	24	666	20.2	396.9	13.99	19.5	19.162594
2.8016	24	666	20.2	393.82	10.29	20.2	26.054369
2.9634	24	666	20.2	396.9	13.22	21.4	20.096025
3.0665	24	666	20.2	334.4	14.13	19.9	15.759239
2.8715	24	666	20.2	22.01	17.15	19	12.563015
2.1675	1	273	21	396.9	5.64	23.9	32.123745
2.3889	1	273	21	393.45	6.48	22	28.685051
2.505	1	273	21	396.9	7.88	11.9	23.011517

Predict single tuple:

- Go to: Neural Network -> Predict
- Input values in the fields (1)
- Press Predict Button (3)

- Prediction is shown in (2)



5. Load/Save/Show Model Information:

Load Model:

- If no model is loaded press the button “Load Model” on the main screen
Or
Go to: Data->Load Model
- Choose a Model file and load it
- After this the model information gets shown
- Overwrites the existing model

Save Model:

- Model must be created or loaded
- Go to: Data ->Save Model
- Choose a path and name and press ok
- After this the model information gets shown

Show Model Information:

- Model must be created or loaded
- Choose “Show Model Information” on the main screen
Or
Go to: Model -> Show Model Information
- Model Information gets shown