

PROJECT IN CMSC150

Polynomial Regression

Quadratic Spline Interpolation

Simplex Implementation

Choose file to upload

Browse...

No file selected

Estimate [N]:

5

☐ Show Interpolated Value

☐ Show Interval Equations

☐ Show Final Matrix

Polynomial Regression

Quadratic Spline Interpolation

Simplex Implementation

Choose file to upload

Browse...

No file selected

Enter degreeVal:

1

Estimate [N]:


1

☐ Show results

Current Iteration at [N]:

1

 Show Minimum Cost

 Show Tableaus Per Iteration

 Final Tableau/Matrix

	W1	W2	W3	W4	W5
DEM:	431.00	332.00	350.00	450.00	400.00

	SUPPLY	W1	W2	W3	W4	W5
P1	1400.00	30.00	29.00	31.00	35.00	33.00
P2	400.00	26.00	24.00	23.00	25.00	27.00
P3	200.00	11.00	13.00	15.00	20.00	17.00

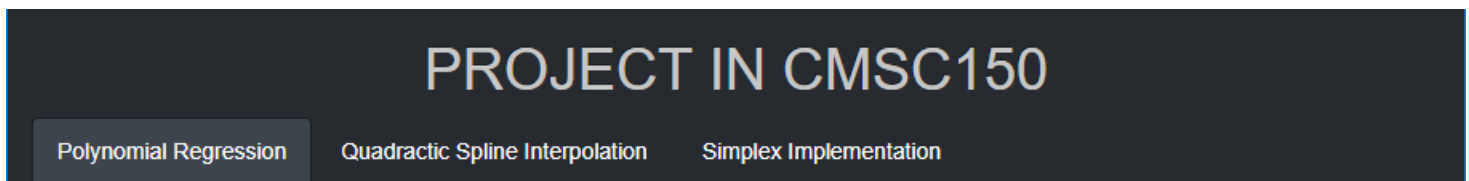
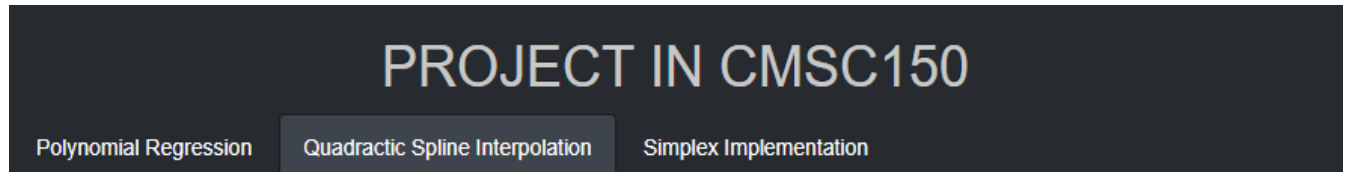
CMSC 150 PROJECT MANUAL

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B3L

USER'S MANUAL

THE NAVIGATION BAR



This bar contains the three main parts of this project mainly the Polynomial Regression Generic Solver, Quadratic Spline Interpolation Generic Solver, and lastly, the Simplex Method Solver.

POLYNOMIAL REGRESSION

A screenshot of the "Polynomial Regression" interface. At the top, there are two tabs: "Polynomial Regression" (selected) and "Quadratic Spline Interpolation". Below the tabs, there is a section titled "Choose file to upload" with a "Browse..." button and a "No file selected" status. Below this is a label "Enter degreeVal:" followed by a text input field containing the number "1". Below that is a label "Estimate [N]:" followed by another text input field containing the number "1". At the bottom, there is a checkbox labeled "Show results".

↔ This part is where you can browse for a .csv (comma-separated-values) in your directories and load it as the source of your data

↔ This is where you enter the degree of the Polynomial that will generate a polynomial function that can be used to solve for a given set of data.

↔ This is where you enter the number you want to estimate using the Polynomial Regression Method

POLYNOMIAL REGRESSION

PROJECT IN CMSC150

Polynomial Regression

Quadratic Spline Interpolation

Simplex Implementation

Choose file to upload

Browse...

No file selected

Enter degreeVal:

1

Estimate [N]:

1

☐ Show results

If you want to know the result of the Polynomial Regression Method you just did, click here!

Polynomial Regression

Quadratic Spline Interpolation

Simplex Implementation

Choose file to upload

Browse...

polyreg_test3.csv

Upload complete

Enter degreeVal:

1

Estimate [N]:

1

☒ Show results

x y

1 0.50

2 2.50

3 2.00

4 4.00

5 3.50

6 6.00

7 5.50

This is your data table where you can see if your .csv file has been loaded successfully.

This is the table that shows the generated polynomial function that can be used to estimate.

Generated Polynomial Function

function(x) 0.0714285714285694 * x^0 + 0.839285714285715 * x^1

This is the table that shows the result of the method

Result After Polynomial Regression

0.91

This is the table that shows the final Polynomial Regression Matrix following the input degree value and toEstimate Value

V1

V2

V3

7.00

28.00

24.00

28.00

140.00

119.50

QUADRATIC SPLINE INTERPOLATION

The interface has two tabs: "Polynomial Regression" and "Quadratic Spline Interpolation". The "Quadratic Spline Interpolation" tab is active. It contains a "Choose file to upload" section with a "Browse..." button and a "No file selected" status. Below this is an "Estimate [N]:" input field with the value "5". At the bottom are three checkboxes: "Show Interpolated Value", "Show Interval Equations", and "Show Final Matrix", all of which are currently unchecked.

This part is where you can browse for a .csv (comma-separated-values) in your directories and load it as the source of your data

This is where you put the [N] that you want to estimate using the Quadratic Spline Interpolation Method

These checkboxes are the ones that will allow you to see the result of the method. You have 3 choices: Show the Interpolated Value, Show the Interval Equations, or Show the final Matrix

The interface shows the results of the Quadratic Spline Interpolation. The "Choose file to upload" section now shows "qsi.csv" and "Upload complete". The "Estimate [N]:" input field still shows "5". The three checkboxes are now checked: "Show Interpolated Value", "Show Interval Equations", and "Show Final Matrix".

Data table showing the content of the .csv file loaded

x	y
3.00	2.50
4.50	1.00
7.00	2.50
9.00	0.50

Shows the estimated result and from what interval it was derived from

QSI Estimated Value	Under f(x) Interval
0.6599999999999954	function(x) 0.64 * x^2 + -6.760000000000001 * x + 18.46

Shows all the interval equations computed

Interval	Function
3 <= x <= 4.5	function(x) -1 * x + 5.500000000000001
4.5 <= x <= 7	function(x) 0.64 * x^2 + -6.760000000000001 * x + 18.46
7 <= x <= 9	function(x) -1.6 * x^2 + 24.599999999999999 * x + -91.29999999999998

Shows the final matrix after the Quadratic Spline Interpolation

V1	V2	V3	V4	V5	V6	V7	V8	V9
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.00
0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	5.50
0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.64
0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	-6.76
0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	18.46
0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	-1.60
0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	24.60
0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	-91.30

This is what it looks like if you checked all the checkboxes. It will show all the results that came from the QSI method implemented on the back end.

SIMPLEX METHOD

Polynomial Regression Quadractic Spline Interpolation **Simplex Implementation**

Current Iteration at [N]:

Show Minimum Cost

Show Tableaus Per Iteration

Final Tableau/Matrix

	W1	W2	W3	W4	W5
DEM:	431.00	332.00	350.00	450.00	400.00

	SUPPLY	W1	W2	W3	W4	W5
P1	1400.00	30.00	29.00	31.00	35.00	33.00
P2	400.00	26.00	24.00	23.00	25.00	27.00
P3	200.00	11.00	13.00	15.00	20.00	17.00

This is the rHandsOnTable which contains the initial data for the sample run of the Simplex Method. This two are the data for DEMAND and SUPPLY, respectively

Polynomial Regression Quadractic Spline Interpolation **Simplex Implementation**

Current Iteration at [N]:

Show Minimum Cost

Show Tableaus Per Iteration

Final Tableau/Matrix

After clicking the Show Minimum Cost Action Button this will show.

Minimized Cost:		No of Iterations:	
54558.00		12.00	

	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10
S1	-1.00	-1.00	-1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S2	0.00	0.00	0.00	-1.00	-1.00	-1.00	0.00	0.00	0.00	0.00
S3	0.00	0.00	0.00	0.00	0.00	0.00	-1.00	-1.00	-1.00	0.00
S4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.00
S5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S6	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00
S7	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
S8	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Z	30.00	26.00	11.00	29.00	24.00	13.00	31.00	23.00	15.00	35.00

	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10
S1	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
S2	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
S3	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00
S4	0.00	-1.00	0.00	0.00	-1.00	0.00	0.00	-1.00	0.00	1.00
S5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S6	1.00	1.00	0.00	0.00	0.00	-1.00	0.00	0.00	-1.00	0.00
S7	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
S8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

This right here is the table that corresponds to the nth number of iteration of your choice

This is this table which is the final table after implementing the simplex method.

Quadratic Spline Interpolation **Simplex Implementation**

	W1	W2	W3	W4	W5
DEM:	431.00	332.00	350.00	450.00	400.00

	SUPPLY	W1	W2	W3	W4	W5
P1	1400.00	30.00	29.00	31.00	35.00	33.00
P2	400.00	26.00	24.00	23.00	25.00	27.00
P3	200.00	11.00	13.00	15.00	20.00	17.00

Lastly, you can edit the first two tables (DEMAND AND SUPPLY) by clicking it and putting an input of your choice.

Then Click the buttons again to see the changes. That's all for this shinyApp.