

CMSC 150 GENERIC SOLVER USER MANUAL

About

This user manual is to help you navigate through the unfortunately incomplete Generic Solver for Polynomial Regression, Quadratic Spline Interpolation, and Simplexes.

How to Use This

Requirements:

- > Make sure that the .csv files are properly formatted (e.g. extra newline at the end of the file)
- > Make sure you have everything listed in the INSTALL.txt file

Running the App:

- > Navigate to the project folder and run RUNME.sh on your terminal using ./RUNME.sh

The resulting app window should look like this when it opens in your browser:

The screenshot shows a web application interface for a generic solver. At the top, there is a section titled "Choose CSV file" with a "Browse..." button and a status "No file selected". Below this, there are three tabs: "Polynomial Regression", "Quadratic Spline", and "Simplex". The "Polynomial Regression" tab is currently selected. Under this tab, there are two input fields: "Input value for function degree:" with a placeholder "degree = ?" and "Input x value:" with a placeholder "x = ?". Below these inputs are two buttons: "Display Equation" and "Estimate X". To the right of the input fields, there is a section titled "Results" which is currently empty.

Select a .csv file using the “Browse” button before you begin. Afterwards, you can navigate the solvers by clicking on their respective tabs.

Polynomial Regression

Choose CSV file

Browse...

poly_reg_sample.csv

Upload complete

Polynomial Regression

Quadratic Spline

Simplex

Input value for function degree:

2

Input x value:

2

Display Equation

Estimate X

Results

Your function: function (x) 7.96048109965681 + -0.153711340206198 * x^1 + 0.00107560137457053 * x^2

function (x) 7.96048109965681 + -0.153711340206198 * x^1 + 0.00107560137457053 * x^2 when x = 2 : 7.6573608247427

Here you can solve for the nth order function that will model your given data and the estimate of $f(x)$.

1. Insert your desired function degree in its respective input box
2. Insert you desired value of x in its respective input box
3. Click the “Display Equation” button to see your equation
4. Click the “Estimate X” button to see the function value given your desired value of x
5. If you want to read data from a different .csv file, select it using the “Browse” button and start over at Step 1

Quadratic Spline

Choose CSV file

Browse...

quad_spline_sample1.csv

Upload complete

Polynomial Regression

Quadratic Spline

Simplex

Input x value:

Display Equation

Estimate X

Equations:

function (x) $0 * x^2 + -1 * x^1 + 5.5 * x^0$

function (x) $0.6400000000000002 * x^2 + -6.760000000000002 * x^1 + 18.46 * x^0$

function (x) $-1.6 * x^2 + 24.6 * x^1 + -91.30000000000002 * x^0$

Your estimated x value when x = 5 is:

0.659999999999947

Here you can solve for the function per interval and the estimate of $f(x)$.

1. Insert you desired value of x in its respective input box
2. Click the “Display Equation” button to see the equations for each interval
3. Click the “Estimate X” button to see the value of the function given your desired value of x
4. If you want to read data from a different .csv file, select it using the “Browse” button and start over at Step 1

Simplex

Here you should have been able to find the answer to the optimization problem but unfortunately it wasn't finished in time.