Group 3: Regression

1. Introduction
2. Applied Software Engineering Principals
3. Regression Models
4. Applications

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Introduction

A Brief Recap

- **Initial Plan:**
  - Focus: Linear Regression
  - Task: Implement five regression models
  - Validation: Compare with established implementations
- **Received Feedback:**
  - Focus on 1 or 2 models
  - Add educational value to the project

Introduction

Our New Approach

- Chose OLS and LWR as focus models
- Retained comparative study
- Developed two web applications
  - One for education
  - One for model visualisation

2. Applied software engineering principals

3. Regression Models

- Ordinary Linear Regression
- Locally Weighted Regression

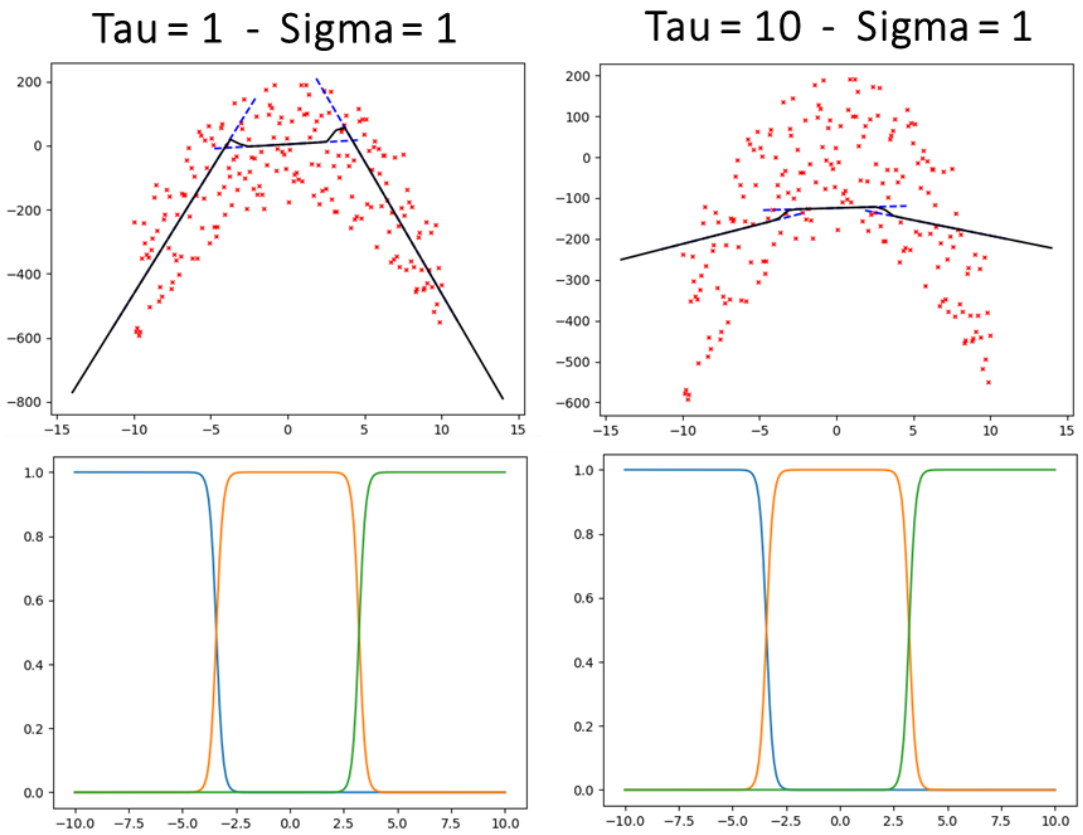
3. Regression Models - LWR

1. Divide into sections
2. For each section, calculate the weighted regression with weight
   $w_i(x) = e^{-\frac{(centre_i - x)^2}{2\tau^2}}$
3. Smoothen the function with $gauss_{centre}(x) = e^{-\frac{(centre - x)^2}{2\sigma^2}}$ and normalising it by dividing through $\Sigma_{centre}\ gauss_{centre}(x)$
   $f(x) = \frac{1}{\Sigma_i\ gauss_i(x)} \Sigma_i gauss_i(x) \cdot f_i(x)$

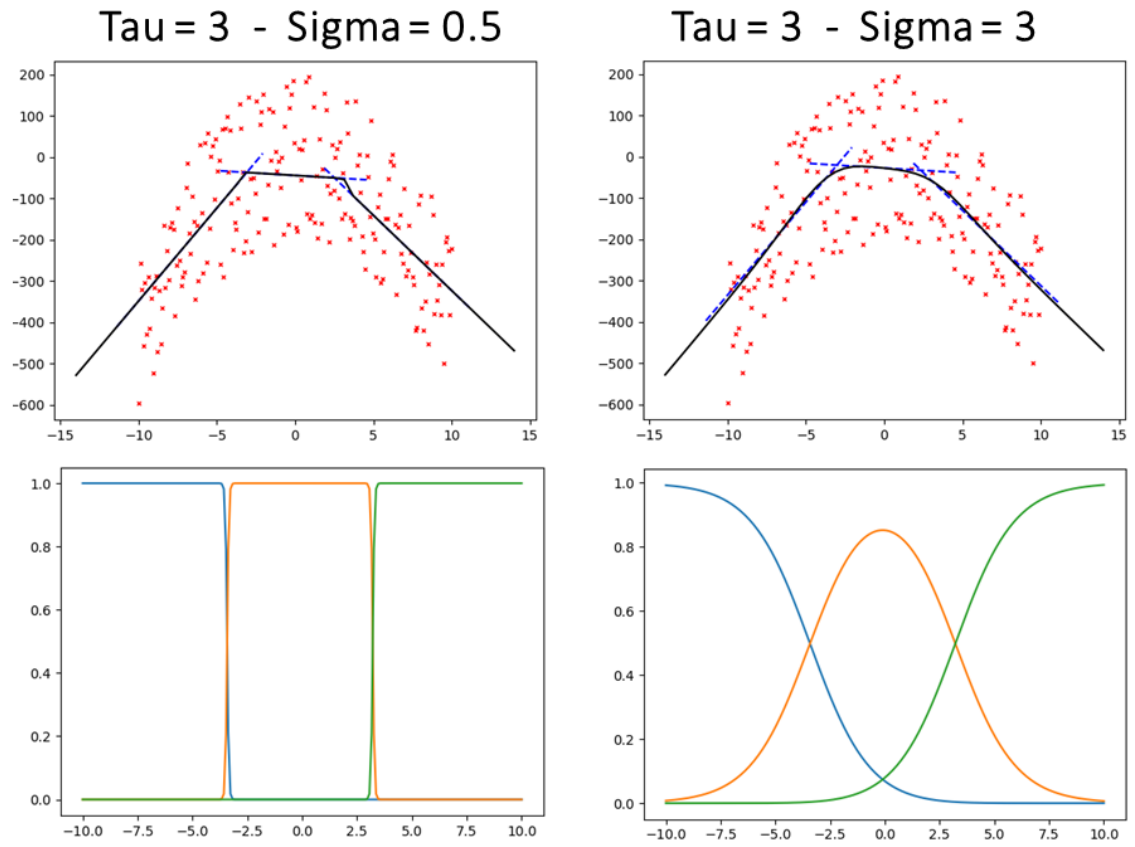
Hyperparameters:

- *amount sections*
- *tau*
- *sigma*

3. Regression Models - LWR - Influence of Tau



3. Regression Models - LWR - Influence of Sigma



4. Applications