Grafické znázornenie

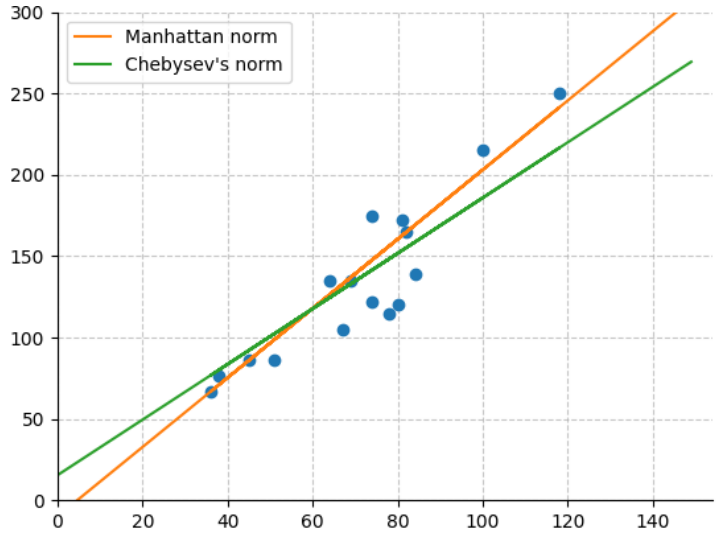
- upravený tvar úlohy

$$\min \left(0_{k+1}^T \,\middle|\, 1_n^T\right) \begin{pmatrix} \beta \\ \hline t \end{pmatrix}$$

$$\left(\begin{array}{c|c} -\mathrm{A} & -\mathbb{I}_n \\ \hline \mathrm{A} & -\mathbb{I}_n \end{array}\right) \begin{pmatrix} \beta \\ \hline t \end{pmatrix} \leq \begin{pmatrix} -y \\ \hline y \end{pmatrix}$$

$$\beta_{0,\ldots,k} \in (-\infty, \infty)$$

$$t_{1,\ldots,n} \in [0, \infty)$$



priamky L^1 a L^∞ lineárnych regresií pre arbitrárne dáta

Implementácia

- upravený tvar úlohy pre solver

$$\min c^T x$$

$$A_{ub} x \leq b_{ub}$$

$$A_{eq} x = b_{eq}$$

$$x \in [l, u] \qquad l \leq u;\ l, u \in (\mathbb{R} \cup \{-\infty, \infty\})^n$$

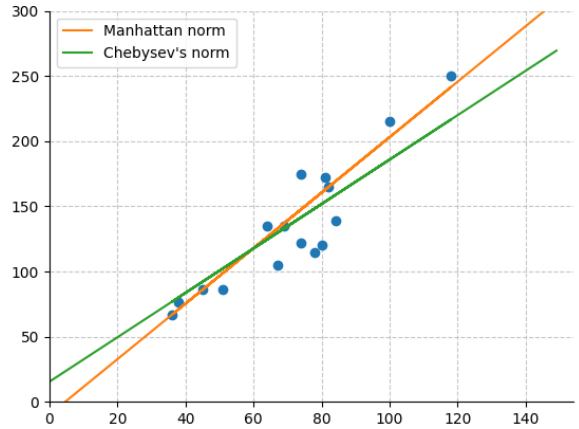
Implementácia

```
c = np.concatenate(([0]*(k + 1), np.ones(n)))
A = np.block([np.ones((n, 1)), np.array(x.values)])
I = np.identity(n)


A_ub = np.block([[-A, -I], [A, -I]])
b_ub = np.concatenate([-y, y])
bounds = [(None, None)]*(k + 1) + [(0, None)] * n
```

Riešenie úlohy a vizualizácia

```
solve = linprog(c, A_ub, b_ub,
                bounds=bounds)
betas = solve.x[:k+1]
```



priamky L^1 a L^∞ lineárnych regresií pre arbitrárne dáta