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prior: $\beta \sim \text{Laplace}(\gamma)$.

$p(\beta) = \left(\frac{\gamma}{2}\right)^p e^{(-\gamma\|\beta\|_1)}$

$$\begin{cases} P(Y|\beta) \sim N(X\beta, \sigma^2). \\ P(Y|\beta) = \dfrac{P(Y,\beta)}{P(\beta)} \Rightarrow P(Y,\beta) = P(Y|\beta)P(\beta). \end{cases}$$

$$= \frac{1}{\sqrt{2\pi\sigma^2}} \exp\left[-\frac{\|Y-X\beta\|_2^2}{2\sigma^2}\right] \left(\frac{\gamma}{2}\right)^p \exp[-\gamma\|\beta\|_1]$$

$$\log P(Y,\beta) = -\frac{\|Y-X\beta\|_2^2}{2\sigma^2} - \gamma\|\beta\|_1 + C.$$

$\therefore \hat{\beta} = \underset{\beta}{\text{argmin}}\left[-\frac{\|Y-X\beta\|_2^2}{2\sigma^2} - \gamma\|\beta\|_1\right]$, which is related to Lasso Regression.