Algorithm 1 Lasso Regression

Require: Dataset D, regularization parameter λ
Ensure: Lasso model parameters β

Initialize parameters β to 0
Set learning rate α and regularization parameter λ
while not converged **do**
    Compute predicted values $\hat{y} = X\beta$
    Compute residuals $e = y - \hat{y}$
    for each feature i **do**
        Compute gradient $\nabla_{\beta_i} = -X_i^T e + \lambda \cdot$ sign (β_i)
        Update parameter $\beta_i \leftarrow \beta_i - \alpha \cdot \nabla_{\beta_i}$
    end for
end while
return β