LASSO   RIDGE

α 0.10   0.25   0.5   0.75   1

Step 1

For fixed α:

↓ Repeat

Iteration	Penalty parameter	AIC's model	Coefficients estimatives	Akaike's Weight of the model	
1	λ_1	AIC_1	$\beta_{11}\ \beta_{12}\ ...\ \beta_{1p}$	$w''_1 = exp\left(-\frac{1}{2}(AIC_1 - AIC_{min})\right)$	$w'_1 = w''_1/\omega$
2	λ_2	AIC_2	$\beta_{21}\ \beta_{22}\ ...\ \beta_{2p}$	$w''_2 = exp\left(-\frac{1}{2}(AIC_2 - AIC_{min})\right)$	$w'_2 = w''_2/\omega$
...					...
R	λ_R	AIC_R	$\beta_{R1}\ \beta_{R2}\ ...\ \beta_{R,p}$	$w''_R = exp\left(-\frac{1}{2}(AIC_R - AIC_{min})\right)$	$w'_R = w''_R/\omega$
		AIC_{min}		Sum $= \omega$	Sum $= 1$

Step 2

Variable j is selected?

$w_j = \boldsymbol{a_j}^T \boldsymbol{w'} \geq 0.80$?

$a_{ij} = \begin{cases} 1, & \beta_{ij} > 0 \\ 0, & \beta_{ij} = 0 \end{cases} ; j = 1, ..., p$

yes

Step 3

Coefficient estimative:

$$\hat{\beta}_j = \frac{\sum w'_i \cdot \hat{\beta}_{ij}}{\sum w'_i}$$

Figure S1: Graphical summary algorithm of the proposed method.