

TCGA and five independent cohorts



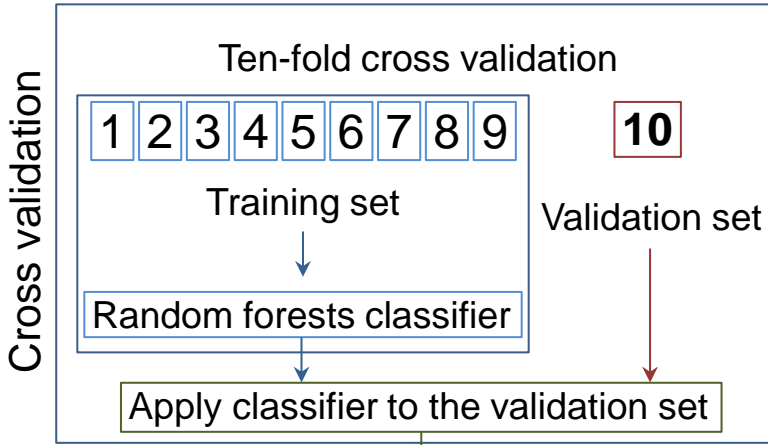
TCGA+ICGC cohort (n=905)

Expression of 65 genes (P)

Patients survival at the third year (s)

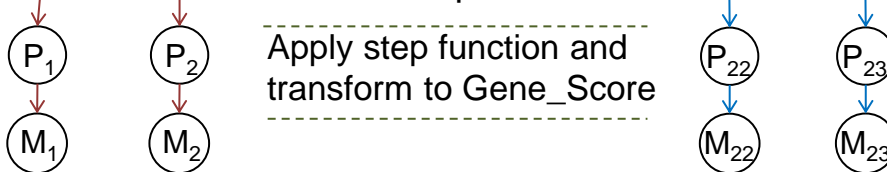
Alive (s=0)

Deceased (s=1)



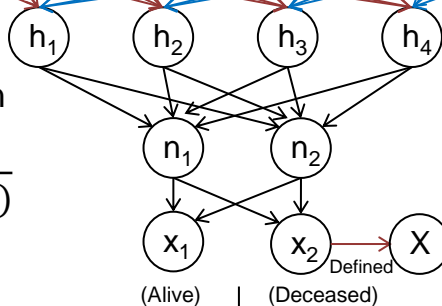
Sorted by importance values
23 genes selected

RALA, PLOD2... Gene_Expression ... *ITPR2, SLC2A2*



Softmax function

$$x_k = \frac{\exp(n_k)}{\sum_{i=1}^2 \exp(n_i)}$$



Loss function (F)
(cross entropy error)

$$F = - \sum_{N=1}^{905} t_n \log X_N$$

Minimize loss function by a gradient descent method

Defined and calculate 'Gene_Weight'