EWAS_methodsEquations

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Distributions

Binomial

Beta-Binomial

Linear

$$\boldsymbol{Y} = \boldsymbol{X}\boldsymbol{B}^T + \boldsymbol{U}\boldsymbol{V}^T + \boldsymbol{\epsilon}$$

$$\boldsymbol{Y} = \boldsymbol{X}\boldsymbol{B}^T + \boldsymbol{g}\boldsymbol{R} + \boldsymbol{U}\boldsymbol{V}^T + \boldsymbol{\epsilon}$$

$$\boldsymbol{X} = variable \;\; of \;\; interest(s) \;\; (VOI)$$
$$\boldsymbol{B} = effect \;\; sizes$$
$$\boldsymbol{U} = latent \;\; factors$$
$$\boldsymbol{V} = latent \;\; factor \;\; loadings$$

$$(\boldsymbol{U}, \boldsymbol{X}) \sim \mathcal{MVN}(0, \boldsymbol{S})$$

$$S = \begin{pmatrix} s_1^2 & 0 & \dots & \rho c_1 \\ 0 & \ddots & 0 & \vdots \\ \vdots & 0 & s_k^2 & \rho c_k \\ \rho c_1 & \dots & \rho c_K & s_{tmax}^2 \end{pmatrix}$$

$$log\Big(\frac{\boldsymbol{M}}{1-\boldsymbol{M}}\Big) = \boldsymbol{X}\boldsymbol{B}^T + \boldsymbol{U}\boldsymbol{V}^T + \boldsymbol{\epsilon}$$

$$\boldsymbol{T} \sim NB(r, p) \;\; where \;\; t_{n,l} >= 10$$