EWAS_methodsEquations

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May 2, 2018

Distributions

Binomial

Beta-Binomial

Linear

$$Y = XB^T + UV^T + \epsilon$$

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

 $X = variable \ of \ interest(s) \ (VOI)$

$$\mathbf{B} = effect \ sizes$$

$$U = latent factors$$

 $V = latent \ factor \ loadings$

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

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

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

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