The Career Atlas: Mathematical Notation

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$$\boldsymbol{\Lambda} = (\Lambda_1, ..., \Lambda_n), \tag{1}$$

$$\Lambda_k = \Lambda(\boldsymbol{ß}_{\boldsymbol{k}}, \boldsymbol{w}) = \left(\frac{1}{W}\right) \sum_{q=1}^{n} ß_{k,q} w_q, \tag{2}$$

$$\mathrm{vs}_k = \mathrm{vs}(\boldsymbol{ß}_{\boldsymbol{k}}, \boldsymbol{w}, \boldsymbol{y}) = \left(\frac{1}{W}\right) \sum_{q=1}^{n} ß_{q,k} w_q u(y_q, y_k), \tag{3}$$

$$ß_{k,q} = \mathrm{eq}(s(\boldsymbol{a}_{\boldsymbol{k}}, \boldsymbol{a}_{\boldsymbol{q}}), c_q) \tag{4}$$

$$u(y_q, y_k) = \begin{cases} 1, \text{if } y_k \geq y_q. \\ 0, \text{otherwise.} \end{cases} \tag{5}$$

$$W = \sum_{q=1}^{n} w_q \tag{6}$$

$$\mathbf{ß} = \begin{bmatrix} ß_{1,1} & \cdots & ß_{n,1} \\ \vdots & \ddots & \vdots \\ ß_{1,n} & \cdots & ß_{n,n} \end{bmatrix} = \begin{bmatrix} 1 & \cdots & ß_{k,1} & \cdots & ß_{n,1} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ ß_{1,k} & \cdots & 1 & \cdots & ß_{n,k} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ ß_{1,n} & \cdots & ß_{k,n} & \cdots & 1 \end{bmatrix} \tag{7}$$

$$\boldsymbol{ß}_{\boldsymbol{k}} = (ß_{k,1}, ..., ß_{k,n}) \tag{8}$$

$$\boldsymbol{ß}_{\boldsymbol{q}} = (ß_{q,1}, ..., ß_{q,n}) \tag{9}$$

$$\gamma_k = \mathrm{sq}(\hat{\boldsymbol{a}}_{\boldsymbol{k}}), \tag{10}$$

$$\hat{\boldsymbol{a}}_{\boldsymbol{k}} = (\hat{a}_1^k, ..., \hat{a}_m^k) \tag{11}$$

$$\hat{a}_i^k = \frac{a_i^k}{\max a_j^k} \tag{12}$$

$$c_k = c(\boldsymbol{a}_{\boldsymbol{k}}, \gamma_k) = \frac{\sum_{i=1}^{m} \ddot{a}_i^k \tilde{a}_i^k}{\sum_{i=1}^{m} \ddot{a}_i^k}, \tag{13}$$

$$\ddot{a}_i^k = \mathrm{eq}(\hat{a}_i^k, \gamma_k) = \mathrm{eq}\left(\frac{a_i^k}{\max a_j^k}, \gamma_k\right) \tag{14}$$

$$c_k = c(\boldsymbol{a_k}, \gamma_k) = \frac{\sum_{i=1}^m a_i^k \tilde{a}_i^k}{\sum_{i=1}^m a_i^k}?, \tag{15}$$

$$\boldsymbol{\ddot{a}_k} = (\ddot{a}_1^k, ..., \ddot{a}_m^k) \tag{16}$$

$$\boldsymbol{\ddot{a}_q} = (\ddot{a}_1^q, ..., \ddot{a}_m^q) \tag{17}$$

$$\boldsymbol{\ddot{a}_n} = (\ddot{a}_1^n, ..., \ddot{a}_m^n) \tag{18}$$

$$\mathbf{\ddot{A}} = \begin{bmatrix} \ddot{a}_1^1 & \dots & \ddot{a}_m^1 \\ \vdots & \ddots & \vdots \\ \ddot{a}_1^n & \dots & \ddot{a}_m^n \end{bmatrix} \tag{19}$$

$$\mathrm{sq}(\boldsymbol{x}) = \mathrm{mlv}(\boldsymbol{x}) + \frac{\tilde{\sigma}_x}{2}\left\{(1 + 2\tilde{\sigma}_x)[1 - \mathrm{mlv}(\boldsymbol{x})] - \frac{\tilde{\sigma}_x}{2}\right\}, \tag{20}$$

$$\tilde{\sigma}_x = \frac{\sigma_x}{\max \sigma_x}, \tag{21}$$

$$\boldsymbol{x} \in [0, 1]^m \tag{22}$$

$$\ddot{\tau}_{k,q} = \mathrm{edq}(\tau_k, \tau_q, c_q) = \left\{1 + \exp\left[-\frac{\tau_q(\tau_k - \tau_q)}{1 - c_q}\right]\right\}^{-1} \tag{23}$$

$$ß_{k,q} = \ddot{s}_{k,q} \times \ddot{\tau}_{k,q} = \mathrm{eq}(s(\boldsymbol{a_k}, \boldsymbol{a_q}), c_q) \times \mathrm{edq}(\tau_k, \tau_q, c_q) \tag{24}$$

$$\text{notation for a binary indicator (bin) operator?} \tag{25}$$

$$?x?_{k,q} = \mathrm{bin}(x_{k,q}) = \begin{cases} 1, \text{if } x_{k,q} \geq 0.5. \\ 0, \text{otherwise.} \end{cases} \tag{26}$$