## 0.1 Mathematical Equations

$$x^{(j)} = \sum_{i<j} o^{(i,j)} \left( x^{(i)} \right) \tag{1}$$

$$\bar{o}^{(i,j)}(x) = \sum_{o \in \mathcal{O}} \frac{\exp\left(\alpha_o^{(i,j)}\right)}{\sum_{o' \in \mathcal{O}} \exp\left(\alpha_{o'}^{(i,j)}\right)} o(x) \tag{2}$$

where $\beta^{(i,j)} = \left( \beta_{o_1^{(i,j)}}, \beta_{o_2^{(i,j)}}, \ldots, \beta_{o_M^{(i,j)}} \right)$ is one-hot encoded alpha by Softmax, and $\alpha_o^{(i,j)} = \left( \alpha_{o_1^{(i,j)}}, \alpha_{o_2^{(i,j)}}, \ldots, \alpha_{o_M^{(i,j)}} \right)$ is an architectural weight vector.

$$\mathrm{Softmax}\left(\alpha_o^{(i,j)}\right) \approx \beta^{(i,j)} \tag{3}$$

$$\bar{o}^{(i,j)}(x) = \sum_{o \in \mathcal{O}} \frac{\exp\left(\alpha_o^{(i,j)}/T\right)}{\sum_{o' \in \mathcal{O}} \exp\left(\alpha_{o'}^{(i,j)}/T\right)} o(x) \tag{4}$$

$$\bar{o}^{(i,j)}(xi) = \sum_{o \in \mathcal{O}} \frac{\exp\left(\alpha_o^{(i,j)}/T\right)}{\sum_{o' \in \mathcal{O}} \exp\left(\alpha_{o'}^{(i,j)}/T\right)} o(xi) \tag{5}$$