

Erratum

Corrections to “Quadratic Backward Propagation of Variance for Nonlinear Statistical Circuit Modeling”

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In our paper [1], there was a typo in (1), and (10) and (11) were incorrect if there is more than one forward propagation of variance (FPV) variable.

In the following, we give the correct expressions for these three equations:

$$e_i(\mathbf{p}) \approx e_i(\bar{\mathbf{p}}) + \sum_{j=1}^N s_{i,j}(p_j - \bar{p}_j) + \sum_{j,k=1}^N s_{i,jk}(p_j - \bar{p}_j)(p_k - \bar{p}_k) \quad (1)$$

$$\begin{aligned} \sigma_{e_i}^2 &= \sum_{j \in \mathcal{F}} \left(s_{i,j}^2 + 2 \sum_{k \in \mathcal{F}} s_{i,jk}^2 \sigma_k^2 \right) \sigma_j^2 \\ &= \sum_{j \in \mathcal{B}} \left(s_{i,j}^2 + 4 \sum_{k \in \mathcal{F}} s_{i,jk}^2 \sigma_k^2 \right) \sigma_j^2 + 2 \sum_{j,k \in \mathcal{B}} s_{i,jk}^2 \sigma_j^2 \sigma_k^2 \quad (10) \end{aligned}$$

$$\begin{aligned} \gamma_{e_i} \sigma_{e_i}^3 &= \sum_{j,k \in \mathcal{F}} \left(6s_{i,j} s_{i,k} + 8 \sum_{l \in \mathcal{F}} s_{i,kl} s_{i,lj} \sigma_l^2 \right) s_{i,jk} \sigma_j^2 \sigma_k^2 \\ &= 12 \sum_{j \in \mathcal{B}} \sum_{k \in \mathcal{F}} \left(s_{i,j} s_{i,k} + 2 \sum_{l \in \mathcal{F}} s_{i,kl} s_{i,lj} \sigma_l^2 \right) s_{i,jk} \sigma_j^2 \sigma_k^2 \\ &\quad + 6 \sum_{j,k \in \mathcal{B}} \left(s_{i,j} s_{i,k} + 4 \sum_{l \in \mathcal{F}} s_{i,kl} s_{i,lj} \sigma_l^2 \right) s_{i,jk} \sigma_j^2 \sigma_k^2 \\ &\quad + 8 \sum_{j,k,l \in \mathcal{B}} s_{i,jk} s_{i,kl} s_{i,lj} \sigma_j^2 \sigma_k^2 \sigma_l^2. \quad (11) \end{aligned}$$

REFERENCES

- [1] I. Stevanović and C. C. McAndrew, “Quadratic backward propagation of variance for nonlinear statistical circuit modeling,” *IEEE Trans. Comput.-Aided Design Integr. Circuits Syst.*, vol. 28, no. 9, pp. 1428–1432, Sep. 2009.

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