Correction

This is a correction to Blei et al. (2017).

- In Algorithm 1, the CAVI algorithm, the ELBO should be

$$\text{ELBO}(q) = \mathbb{E}\left[\log p(\mathbf{z}, \mathbf{x})\right] - \mathbb{E}\left[\log q(\mathbf{z})\right].$$

  (Thanks to Mohammad Rasool Izadi.)

- In Algorithm 2, CAVI for a Gaussian mixture, the variational distribution of the cluster assignments is $q(c_i; \varphi_i)$. (Thanks to Mohammad Rasool Izadi.)

- Equation 53 should be

$$\lambda_t = \lambda_{t-1} + \epsilon_t g(\lambda_{t-1}),$$

  (Thanks to Pedro Ferreira.)

- On page 866, we discuss the class of models where each conditional is in the exponential family, and we list several examples. We incorrectly included Poisson regression in this list; it is not in the class of models. (Thanks to Andrew Nguyen.)

References

Blei, D., Kucukelbir, A., and McAuliffe, J. (2017). Variational inference: A review for statisticians. *Journal of American Statistical Association*, 112(518):859–877.