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A Bayesian latent-variable model optimized with variational inference

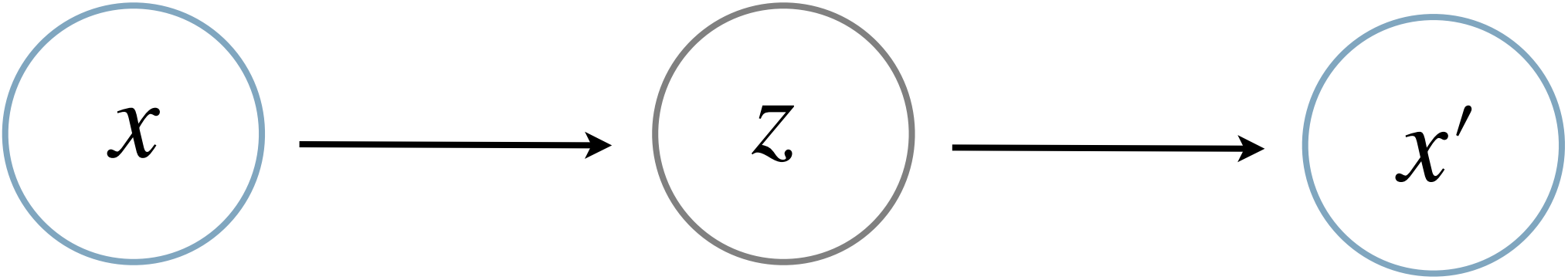

z
x
N

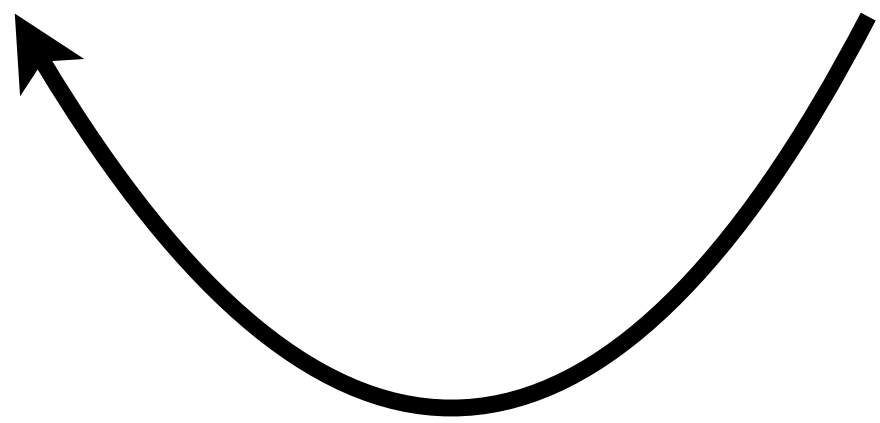
Maximizing ELBO

$\equiv$ Minimizing *reverse* KL

$\equiv$ Aligning the forward and reverse processes

Minimize $\left\langle \log \frac{q(x,z)}{p(x,z)} \right\rangle$


x
z
x'



$$q_\varphi(z \mid x) \cdot p(x)$$

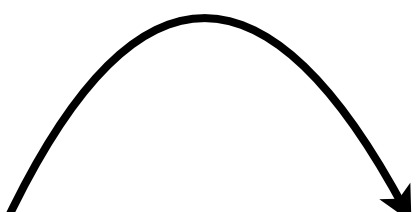
Forward process

It's so over

We're so back

Reverse process

$$p_\vartheta\left(x \mid z\right) \cdot p(z)$$



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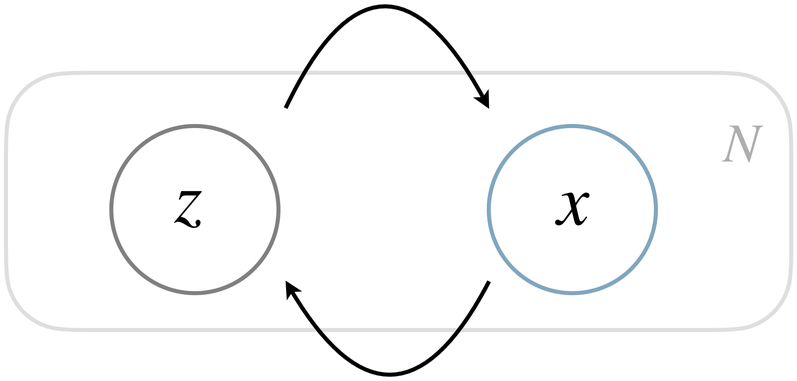

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Forward process

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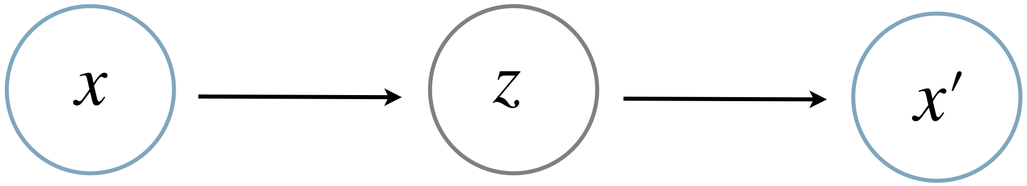

Christopher Yau
@cwcyau

People do realise that a variational autoencoder comes from the application of variational inference to a Bayesian latent variable model right? It isn't an arbitrary loss function with a KL term stuck on to it with a tweakable parameter to balance the two?

Julian Togelius @togelius · Sep 22, 2021
No. I think of it as an arbitrary loss function and it works well for me. I'm in favor of arbitrary loss functions.

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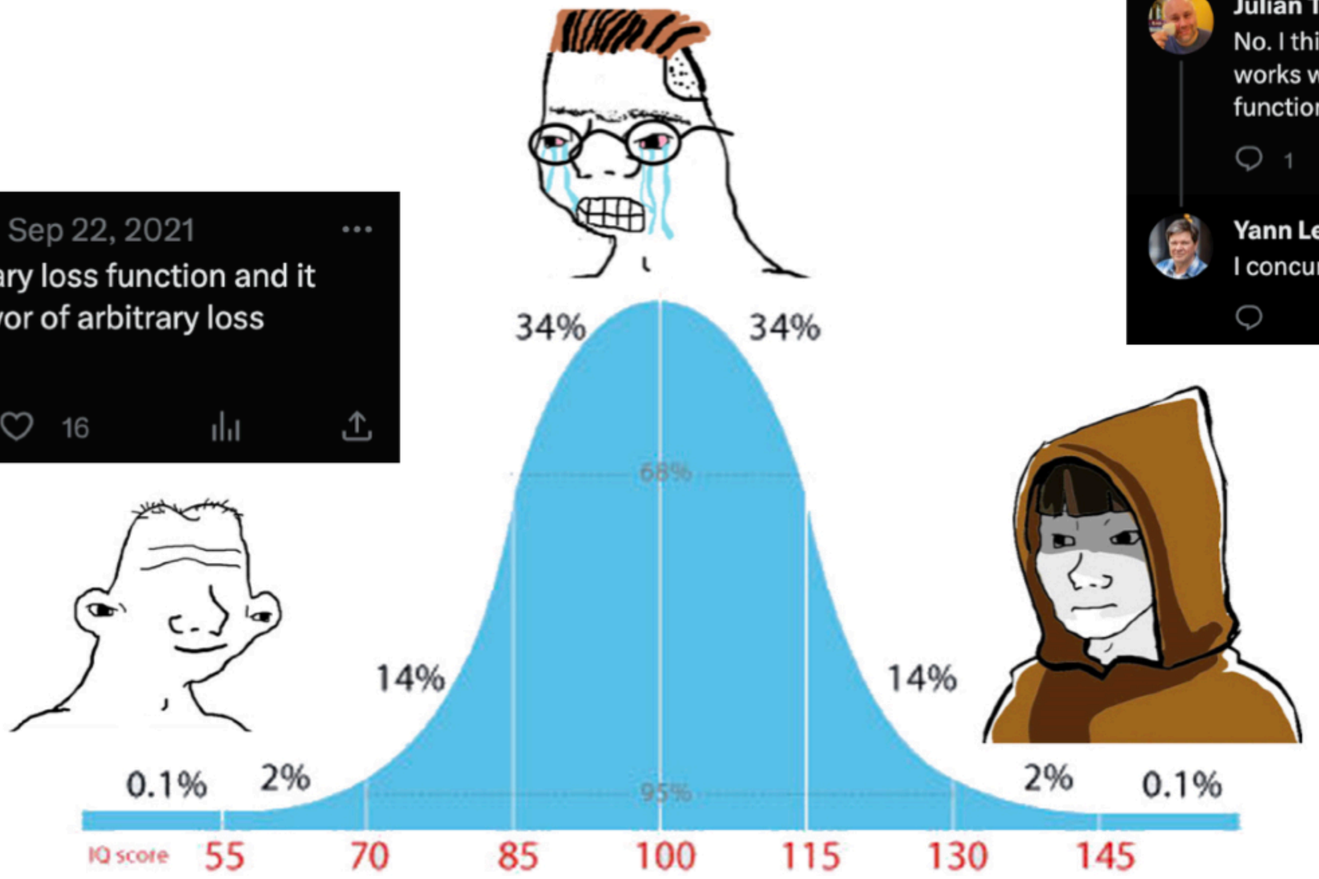

Julian Togelius @togelius · Sep 22, 2021
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Yann LeCun @ylecun · Sep 22, 2021
I concur.

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