Background: normalizing flows

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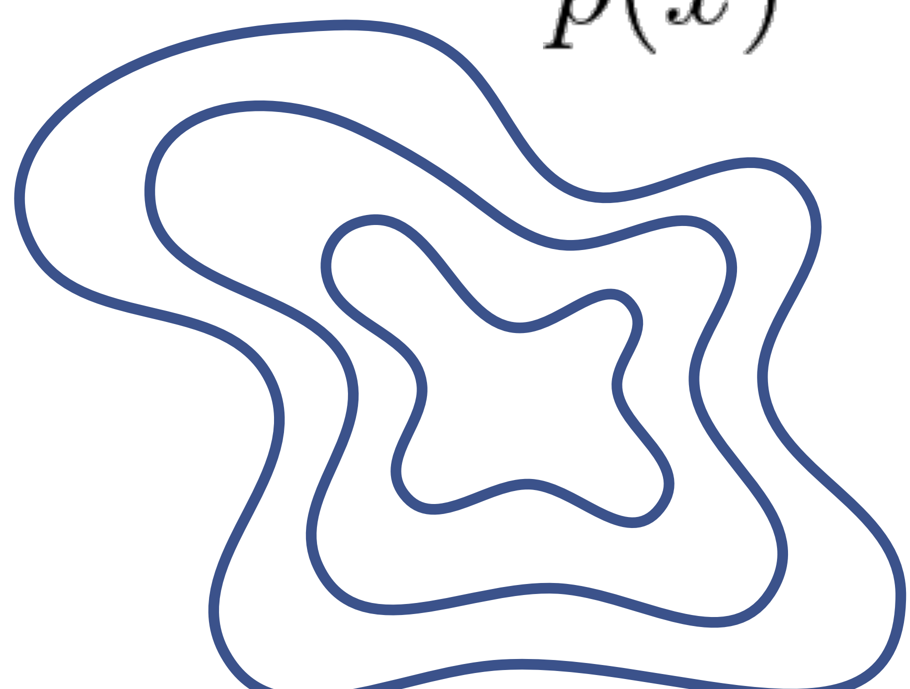
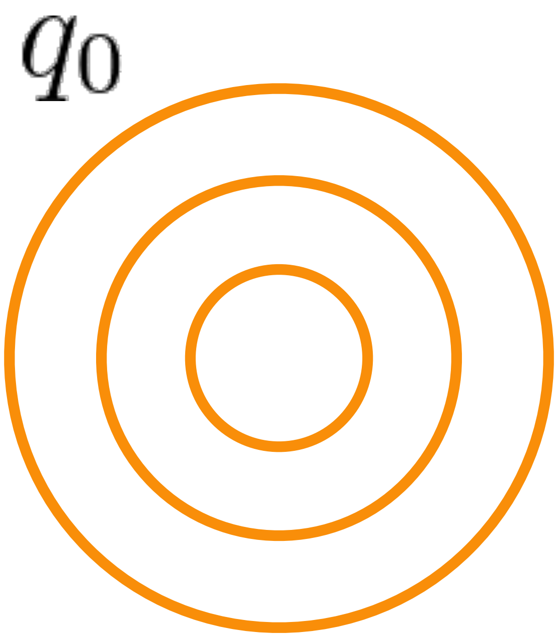
problem: how to approximate $p(x)$?

(dropping conditioning on data)



solution: push a simple distribution

$$x_0 \sim q_0$$



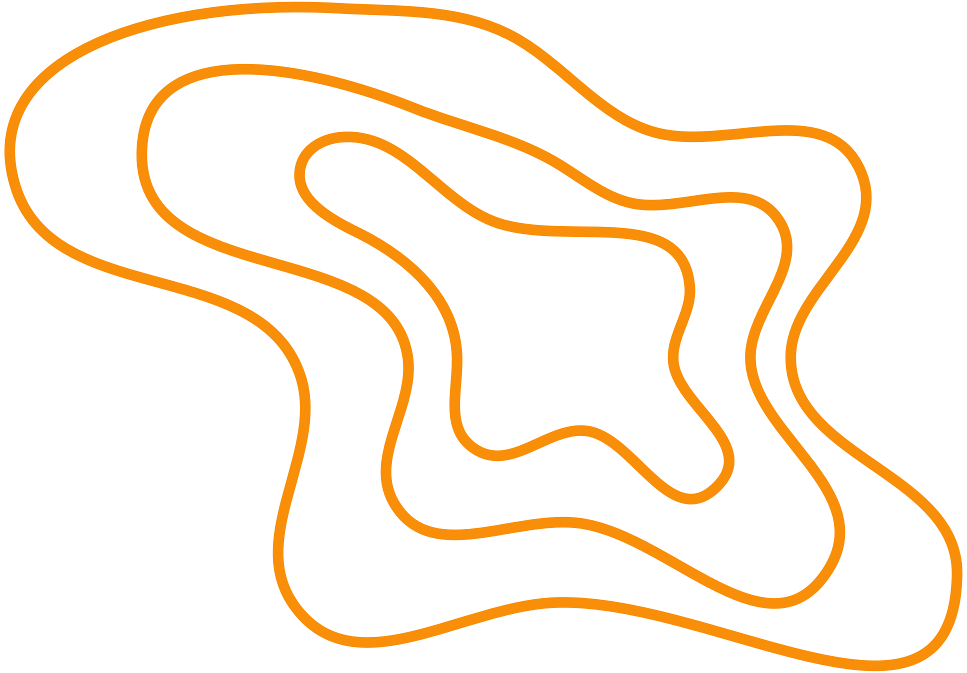
solution: push a simple distribution through parametrized map

T_λ

(diffeomorphism)

$$T_\lambda(x_0) \sim q_\lambda \approx p$$

T_λ



then choose best map: $$\arg\min_{\lambda \in \Lambda} \mathrm{KL}(q_\lambda \,||\, p)$$

i.i.d. sampling by evaluating map

$$X_0 \sim q_0 \qquad X := T_\lambda(X_0) \sim q_\lambda$$

density through change of variables

$$q_\lambda(x) = q_0(T_\lambda^{-1}(x))|J_\lambda(T^{-1}(x))| \quad |J_\lambda(x)| = \nabla T_\lambda^{-1}(x)$$

problems:

- density formula only valid for real-valued x

- need to optimize λ

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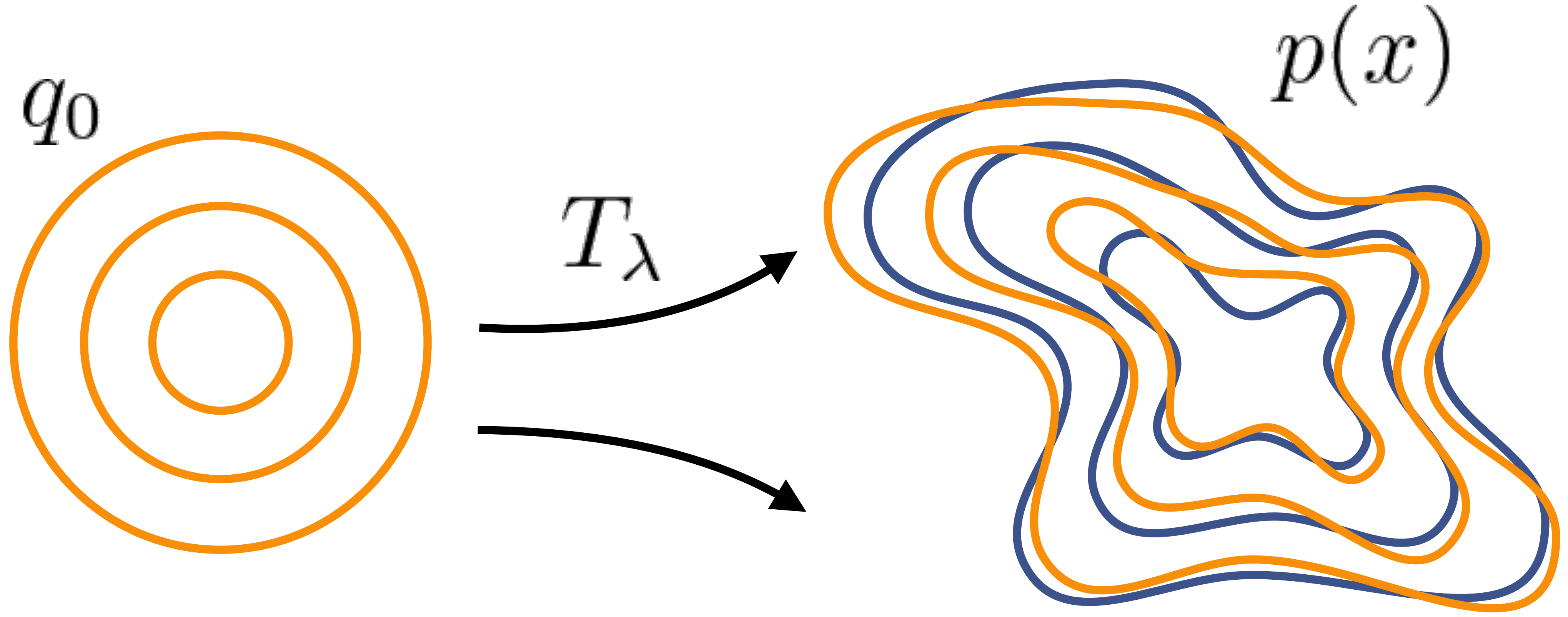
(dropping conditioning on data)

solution: push a simple distribution through parametrized map

$$x_0 \sim q_0 \xrightarrow[\text{(diffeomorphism)}]{T_\lambda} T_\lambda(x_0) \sim q_\lambda \approx p$$



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- need to optimize λ

Background: Mixed flows (MixFlows)

problem: have to optimize λ