

Implementing Normalizing Flows

In general, a determinant calculation is $\mathcal{O}(d^3)$

$$\left| \det \frac{\partial T_{\theta}(\mathbf{x})}{\partial \mathbf{x}} \right| \quad \begin{bmatrix} \times & \times & \times & \times & \times \\ \times & \times & \times & \times & \times \\ \times & \times & \times & \times & \times \\ \times & \times & \times & \times & \times \\ \times & \times & \times & \times & \times \\ \times & \times & \times & \times & \times \end{bmatrix} :$$

unless you exploit some structure:

$$\begin{bmatrix} \times & & & & \\ \times & \times & & & \\ \times & \times & \times & & \\ \times & \times & \times & \times & \\ \times & \times & \times & \times & \times \end{bmatrix}$$

Coupling layer

Need an invertible transformation

Whose Jacobian is triangular