TODO: Motivation for Optimal Transport & recall some definitions from measure theory

Let $(X, \mathcal{A})$ be a measurable space and $\mu, \tilde{\mu}$ two measures on it. We say that μ is absolutetly continuos with respect to $\tilde{\mu}$ and write $\mu \ll \tilde{\mu}$, if

$$\tilde{\mu}(A) = 0 \Rightarrow \mu(A) = 0 \qquad \forall A \in \mathcal{A}\,.$$

Let $(X, \mathcal{A}, \mu)$ be a measure space and $(Y, \mathcal{U})$ a measurable space. For a measurable function $T : X \to Y$, we denote by $T_{\#}\mu$ the pushforward measure on Y induced by T, i.e

$$T_{\#}\mu(B) = \mu(T^{-1}(B)) \qquad \forall B \in \mathcal{U}\,.$$

TODO: