

$$\underbrace{P_0}_{\in \mathbb{R}^3} \in \mathbb{R}^2$$

$$\underbrace{D_0}_{\in \mathbb{R}^3} \in \mathbb{R}^2$$

$$\underbrace{DF(D_0)}_{\substack{\text{DERI-} \\ \text{VADA}}} \underbrace{\in \mathbb{R}^3}_{\in \mathbb{R}^2} : \mathbb{R}^2 \rightarrow \mathbb{R}$$