





## On the Power of Foundation Models

### 3.1 Reproducing Kernel Hilbert Space (RKHS)

Given two objects  $X, Y \in C$ , consider a feature map  $f : C \rightarrow H$ , where the feature space  $H$  is usually much larger than  $C$ . We may define a kernel  $k$  that measures the similarity of  $X$  and  $Y$  as  $k(x, y) = \langle f(x), f(y) \rangle_H$ , i.e., the inner product between the two objects after mapping them to the feature space. For any vector  $T \in H$ , it also corresponds to a function





**Definition 6** (Representable functor). *A functor  $T : \mathcal{C} \rightarrow \mathcal{D}$  is representable if there is an isomorphism  $h_c(X) \cong T(X)$  for*





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Doersch, C., Gupta, A., and Efros, A. A. (2015). Unsupervised visual representation learning by context prediction.  
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