1. More implementation details

Different from Nickel et al. [4], which updates the prototypes sparsely, i.e., updating one column of $P$ per iteration, we update prototypes $P$ globally. The reason that we don’t update sparsely is that $P$ and its gradients are small enough to fit into one GPU’s memory.

For constructing the hyperbolic space, we use geoopt\(^1\) library, which is equipped with $\mathbb{D}^n$, $\mathbb{R}^n$, $\mathbb{S}^{n-1}$ and corresponding distance metrics, for hyperbolic manifold implementation.

2. Dataset hierarchy

Without losing semantic consistency, we slightly revise the hierarchy of ActivityNet[2] and Kinetics[1] to make the tree structure flat. We also construct hierarchy for Moments-in-Time[3] according to VerbNet[5]. Those hierarchies are listed in Fig.1, Fig.2 and Fig.3.

References


\(^1\)https://github.com/geoopt/geoopt
Figure 1. The hierarchy of Hierarchical ActivityNet.
Figure 2. The hierarchy of Hierarchical Kinetics.
Figure 3. The hierarchy of Hierarchical Moments.