Contribution ID: **107** Type: **not specified**

CoCo: Contrastive Combinatorics

Monday 6 November 2023 16:15 (15 minutes)

We present CoCo (Contrastive Combinatorics) a new approach using contrastive learning to solve object assignment in HEP. By utilizing contrastive objectives, CoCo aims to pull jets originating from the same parent closer together in an embedding space while pushing unrelated jets apart.
This approach can be extended natively to have multiple objectives for each subsequent particle in a decay chain, and results in a flexible and interpretable embedding space.

After learning an embedding, we can perform a clustering in this space to recover the final assignment of jets to their parent particles.

We benchmark our performance against the chi2 method, as well as Topographs on the tt˜ system.

Primary authors: SENGUPTA, Debajyoti (Universite de Geneve (CH)); RAINE, Johnny (Universite de Geneve (CH)); GOLLING, Tobias (Universite de Geneve (CH))

Presenter: SENGUPTA, Debajyoti (Universite de Geneve (CH))

Session Classification: Reconstruction & Representation Learning