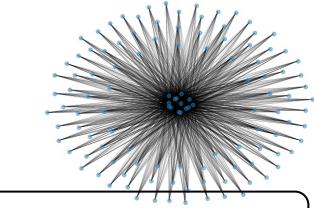
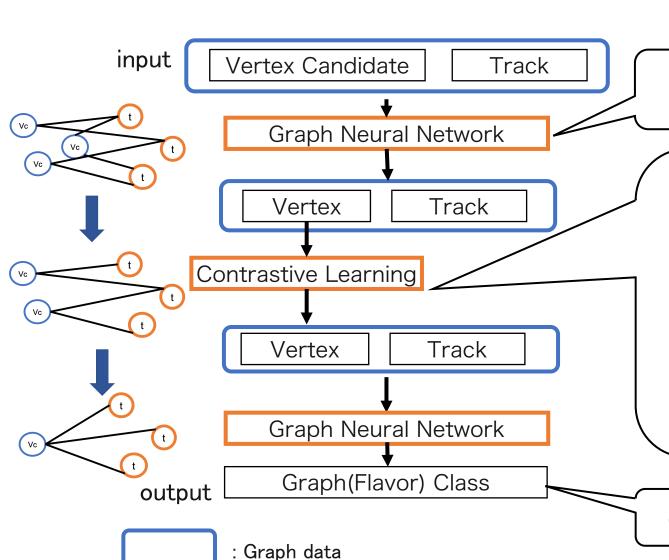
Status Report

2022.12.14

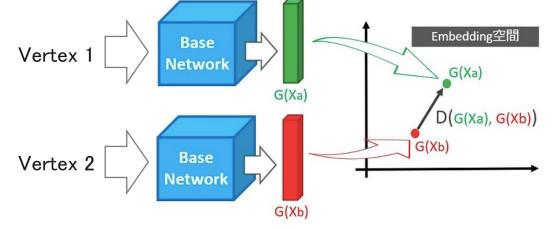
Tomoki Onoe (Kyushu Univ.)

Previous strategy





Judge whether a vertex candidate is an existing vertex or not as node classification.



Deep Metric learning brings Vertexes of the same parent particle closer together.

Classify the entire graph into flavor types

Another strategy

- Input (1track/node)

- 1. d_0
- *2.* ϕ
- *3.* ω
- 4. z_0
- 5. $\tan \lambda$
- 6. Uncertainty of d_0
- 7. Uncertainty of z_0

Category label (1track/node)

- 1. PV
- 2. SVBB
- 3. SVCC
- 4. TVCC
- 5. Others

Over view of network

input

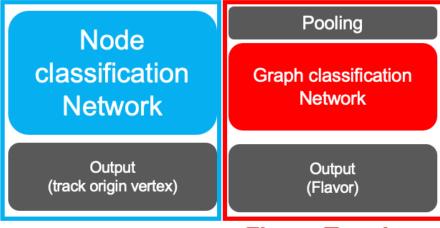
FC

Graph Neural Network

- Loss function

$$L_{total} = L_{Flavor} + aL_{Vertex}$$

- Track-only homo-graphs can be constructed (Computationally convenient because of the same input)
- Can account for track classification and graph classification losses at the same time (even vertex)



Track classification

Flavor Tagging

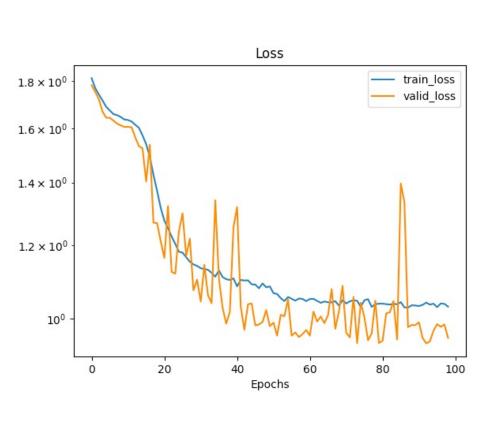
(1jet/graph)

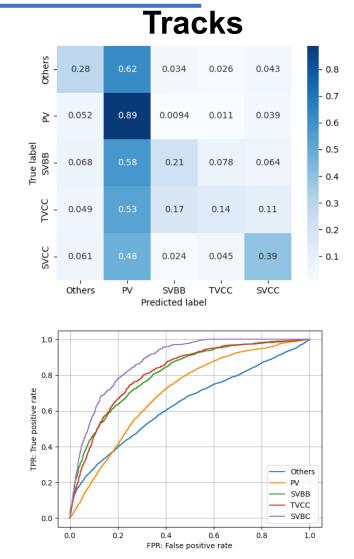
bb

CC

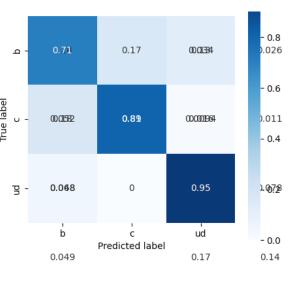
uudd

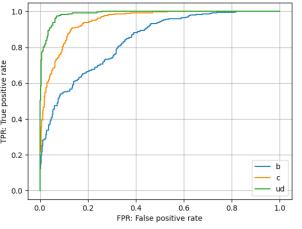
Preliminary result





Graphs





Asian Physics & Software meeting

Preliminary result

