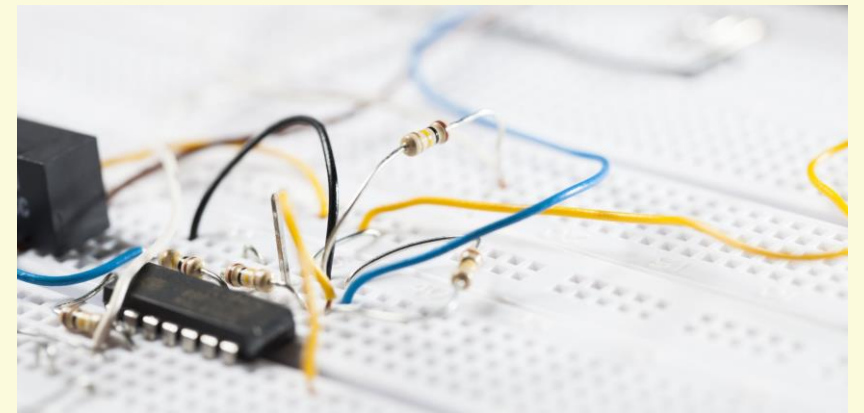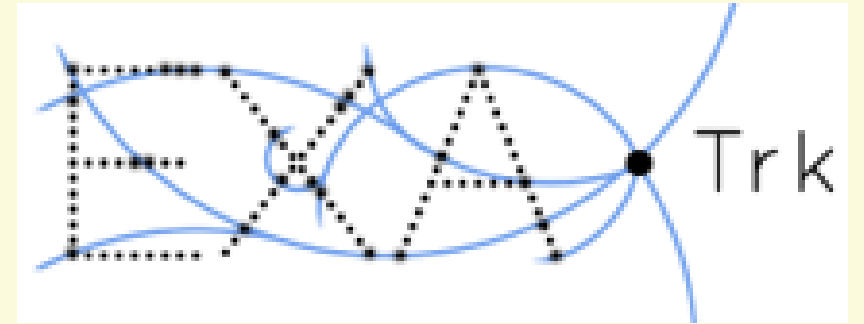# Optimizing the Exa.TrkX Inference Pipeline for Manycore CPUs

Nirajan Acharya[1], Emma Liu[2], Alberto Lucas[3] and Alina Lazar[1]

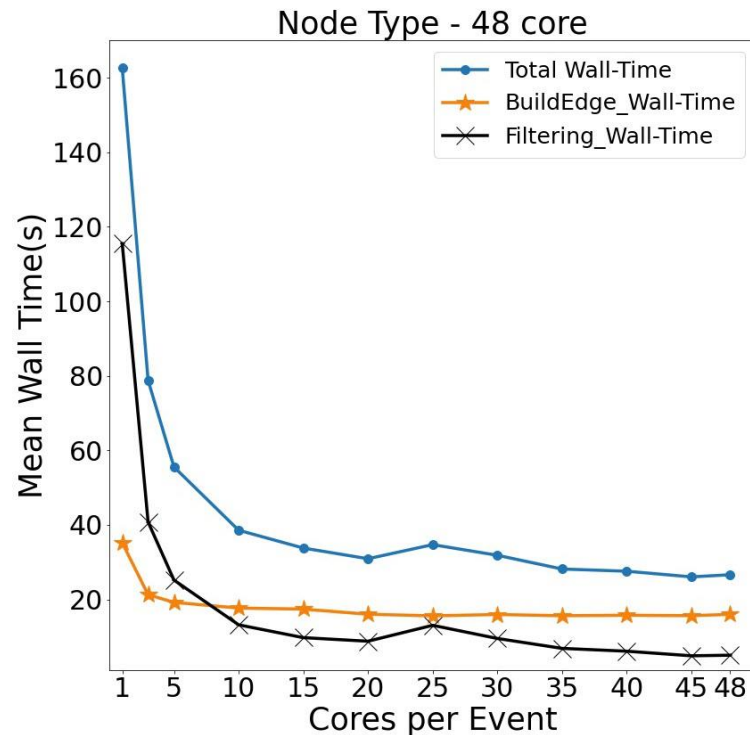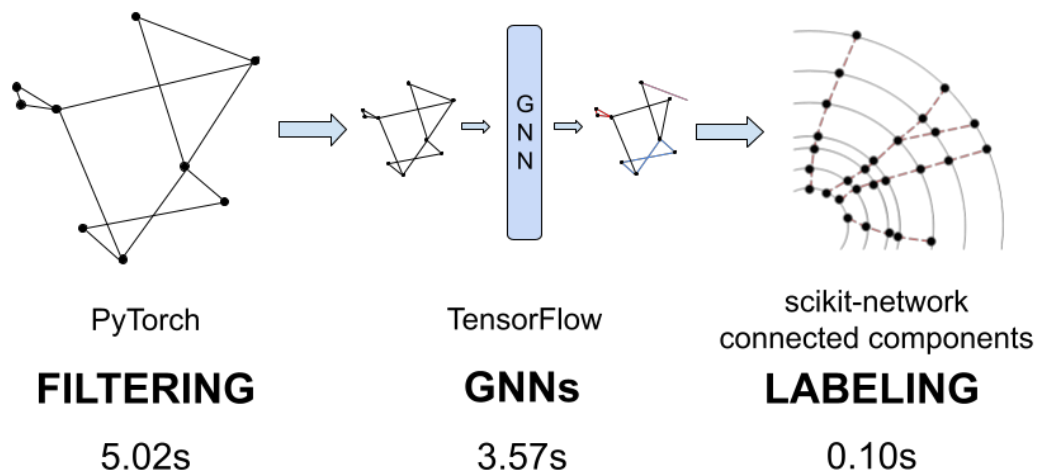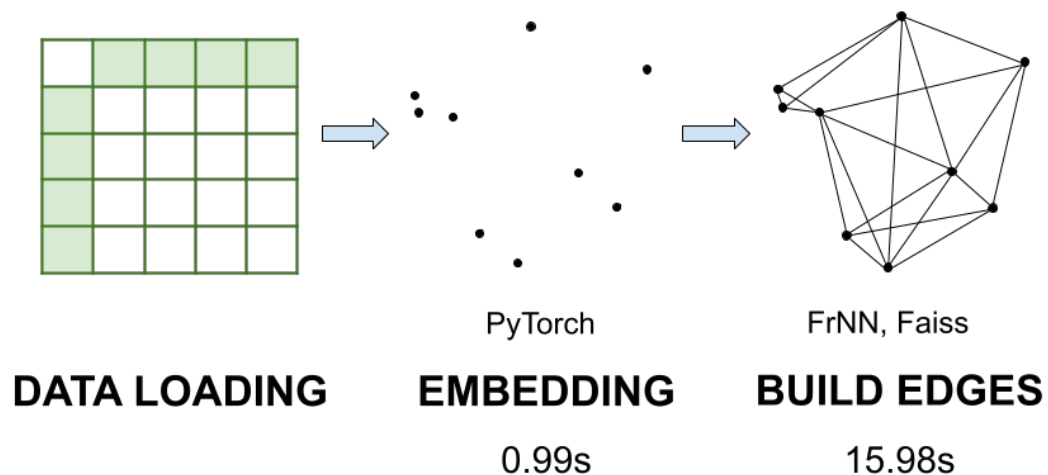on behalf of the **Exa.TrkX** collaboration

[1]Youngstown State University,

[2]University of California, Los Angeles,

[3]California State University, Monterey Bay

The Exa.TrkX Inference Pipeline

DATA LOADING

EMBEDDING
PyTorch
0.99s

BUILD EDGES
FrNN, Faiss
15.98s

FILTERING
PyTorch
5.02s

GNNs
TensorFlow
3.57s

LABELING
scikit-network
connected components
0.10s

Node Type - 48 core

MPI was used to run events in parallel, using multiple cores.

The most time-consuming steps of the pipeline are Build Edges and Filtering. To speed-up Build Edges we used Faiss with 2 threads and multiprocessing for the Filtering for-loop.

The results indicate that it is best to use between 10 and 15 cores per event, however running it on the GPU is still 38 times faster.