

## root2gnn: GNN for HEP data

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We developed a python-based package that facilitates the usage of graph neural network on HEP data. It is featured with pre-defined GNN models for edge classification and event classification. It also contains a couple of realistic examples using GNN to solve HEP problems, for example, top tagger (event classification) and boosted boson reconstruction (edge classification). One can import the modules to convert the HEP data to different graph types, run the training, monitor the performance, and launch automatic hyperparameter tuning (missing for now). It can be found at [https://github.com/xju2/root\\_gnn](https://github.com/xju2/root_gnn) (documentations are in development). Below is a selection of its features/wishes:

- Common interface for converting physics events saved in different data formats to (fully-connected) graph structures. To be developed so as to allow different graph types (such as hypergraphs, customized edges)
- Pre-defined GNN models; Ultimately, we would like to cover all GNN models used in physics publications, i.e. one-stop GNN model shopping station
- Pytorch-lightning style trainers to make sure an easy training procedure
- Metrics monitoring
- Practical examples to get started with GNNs with public datasets

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