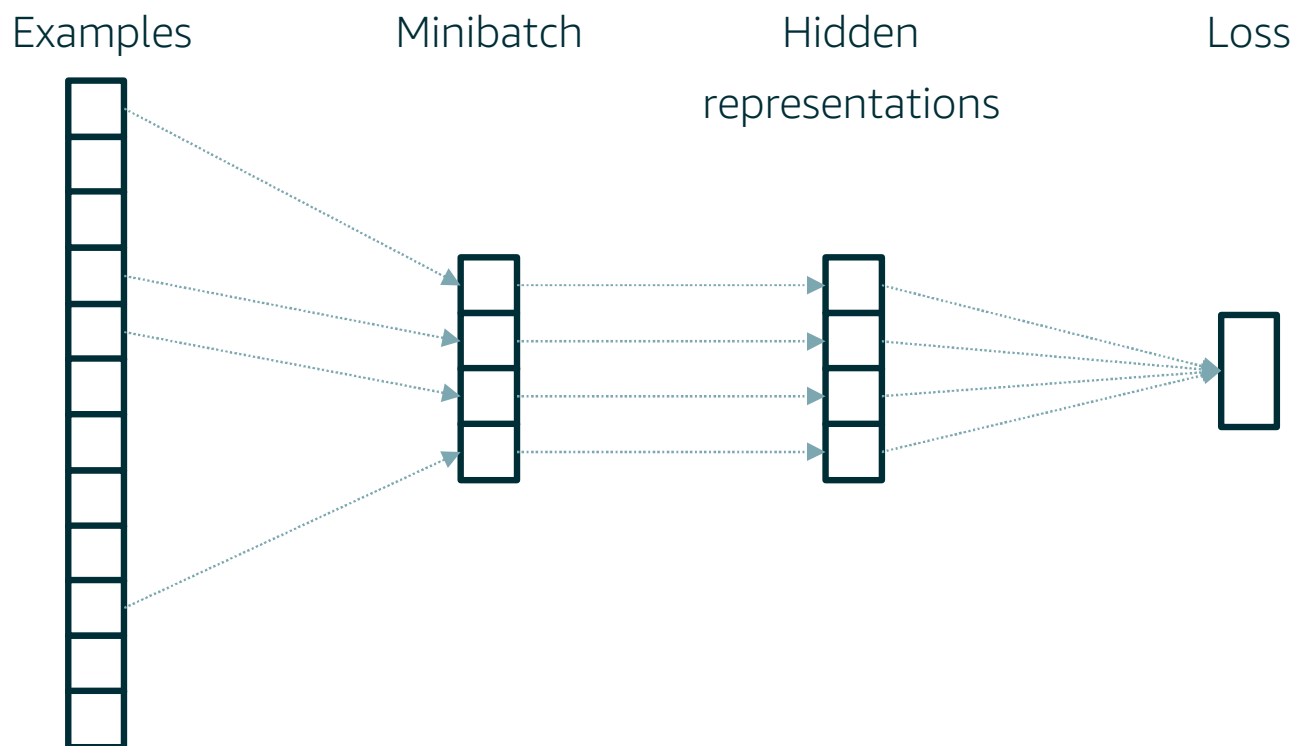# Minibatch Training of GNNs with DGL
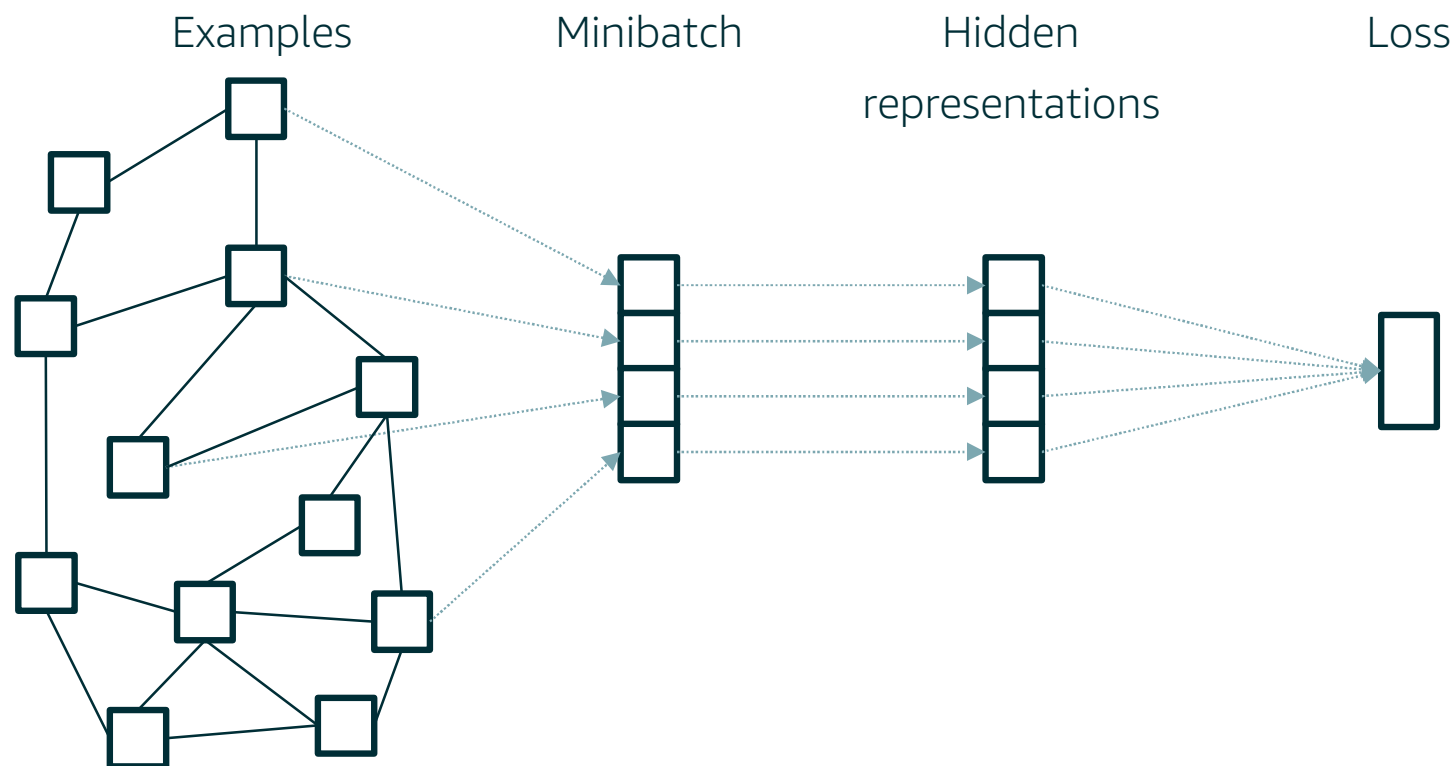
Quan Gan
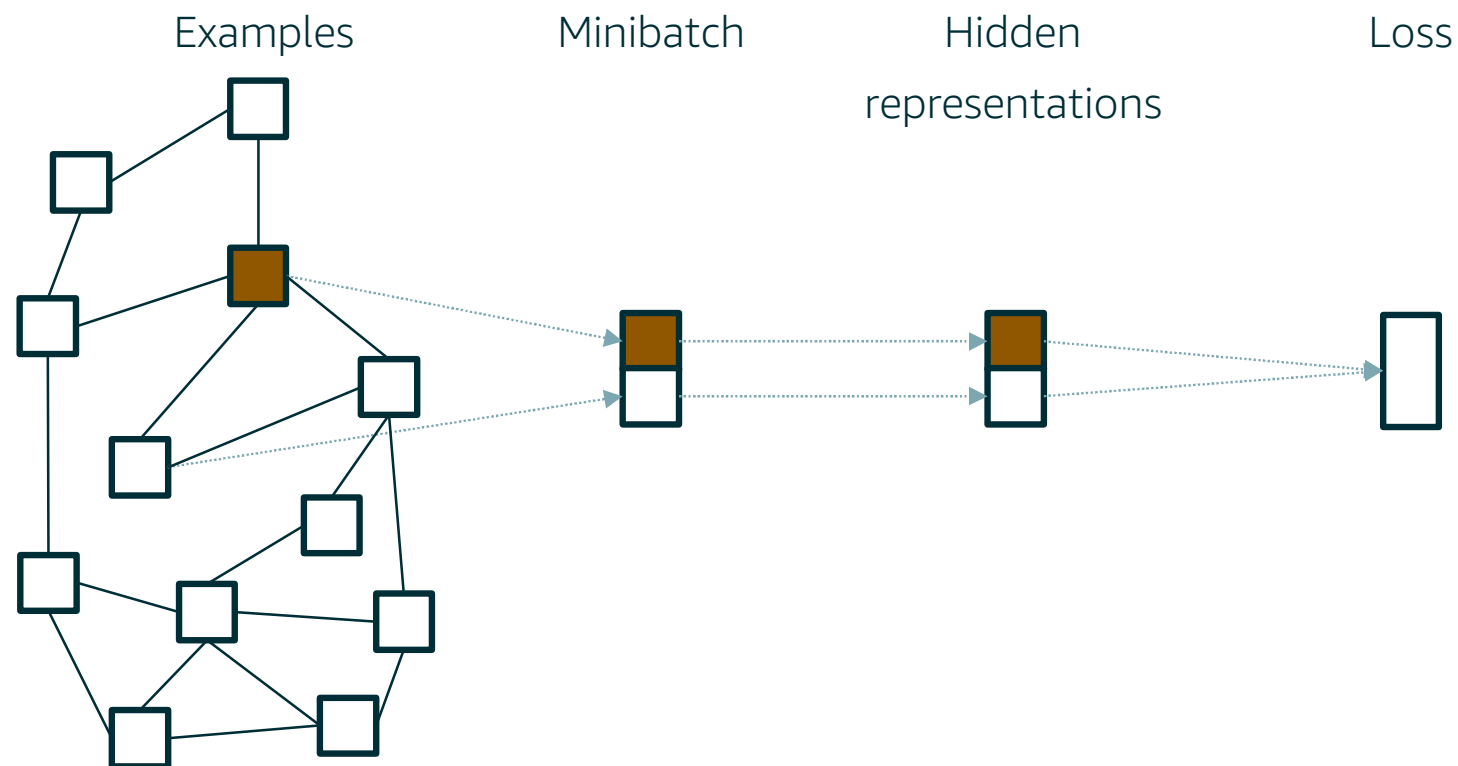
amazon

How Minibatch Training of Normal Deep Learning Models Work?

Examples   Minibatch   Hidden
                                  representations   Loss

Problem in Minibatch Training of a GNN

Examples   Minibatch   Hidden
representations   Loss

Problem in Minibatch Training of a GNN

Examples   Minibatch   Hidden representations   Loss

Problem in Minibatch Training of a (1-layer) GNN

Examples
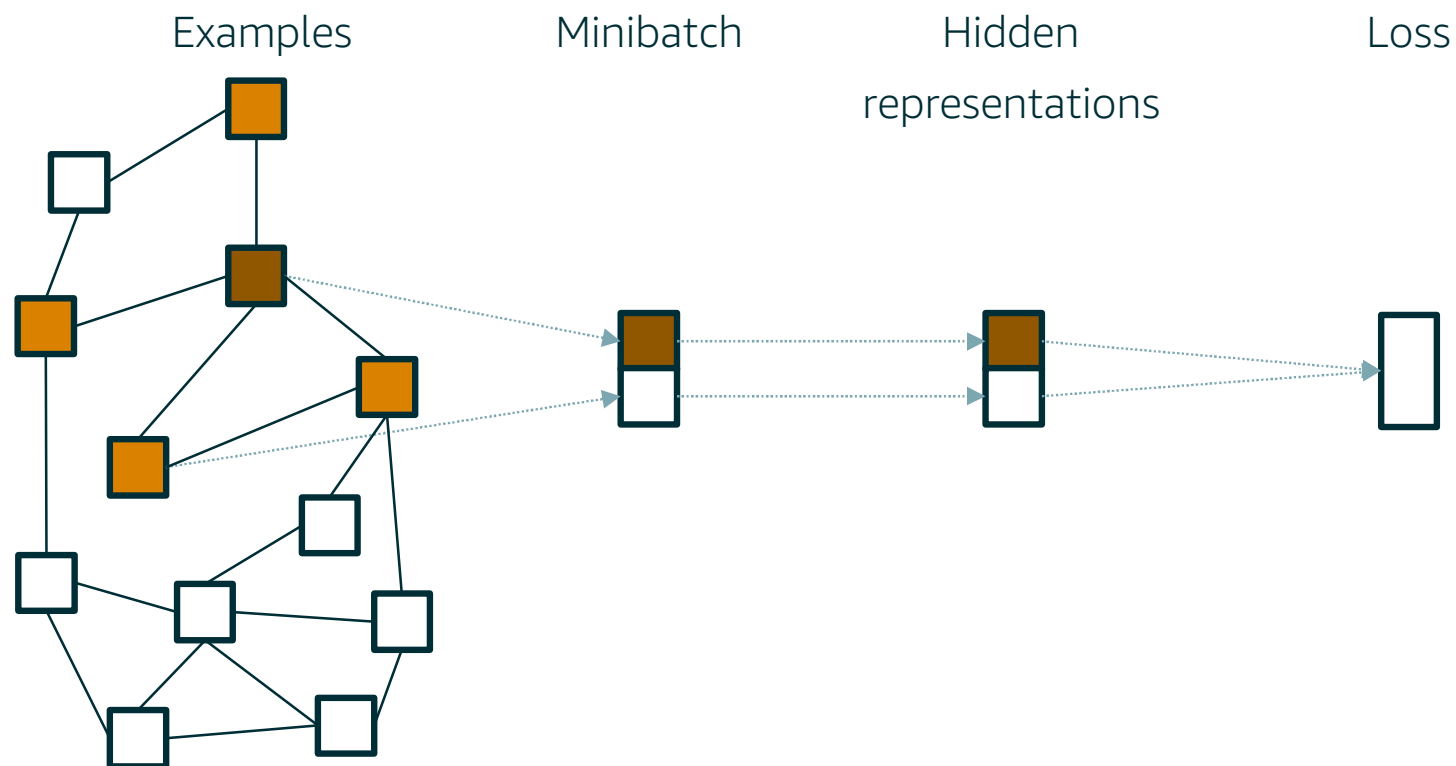
Minibatch

Hidden representations

Loss
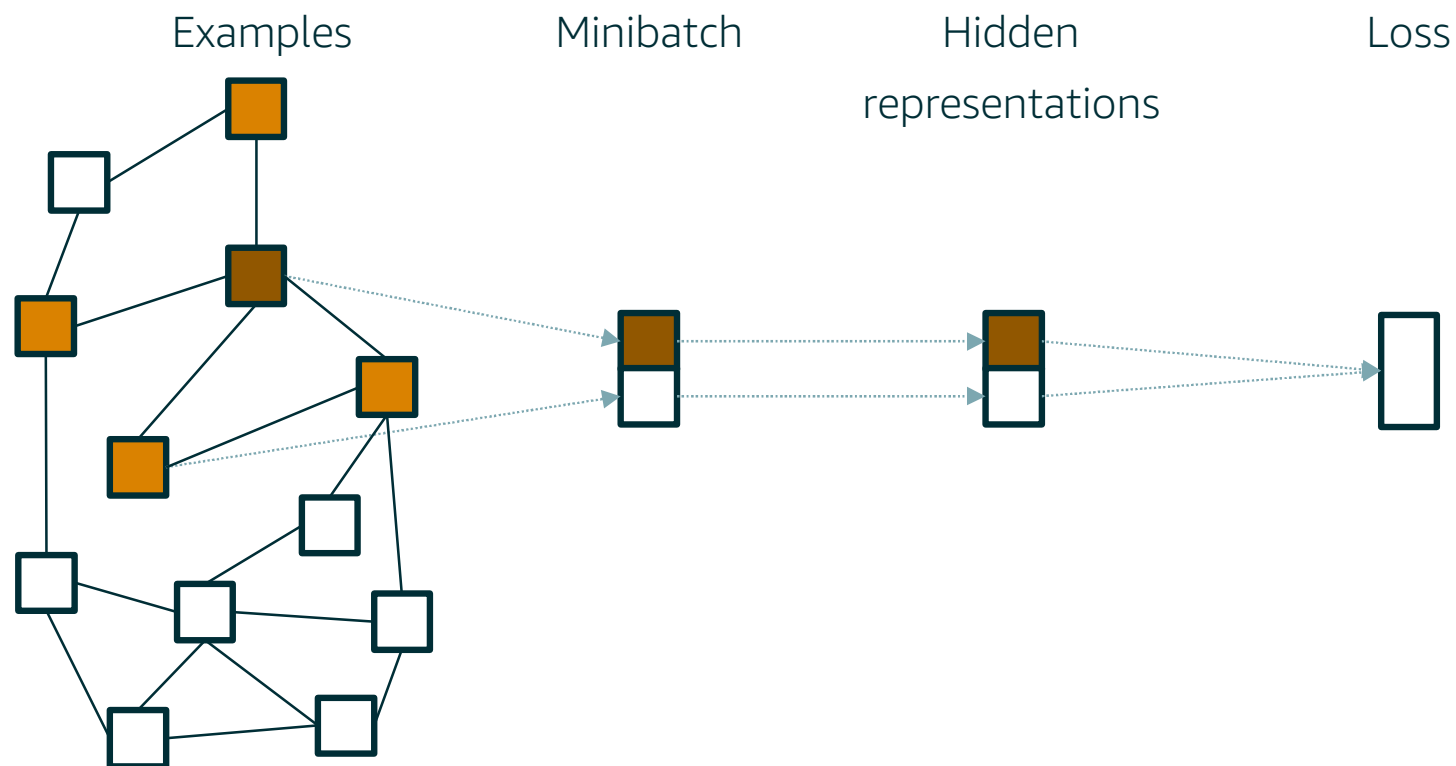
Problem in Minibatch Training of a (2-layer) GNN
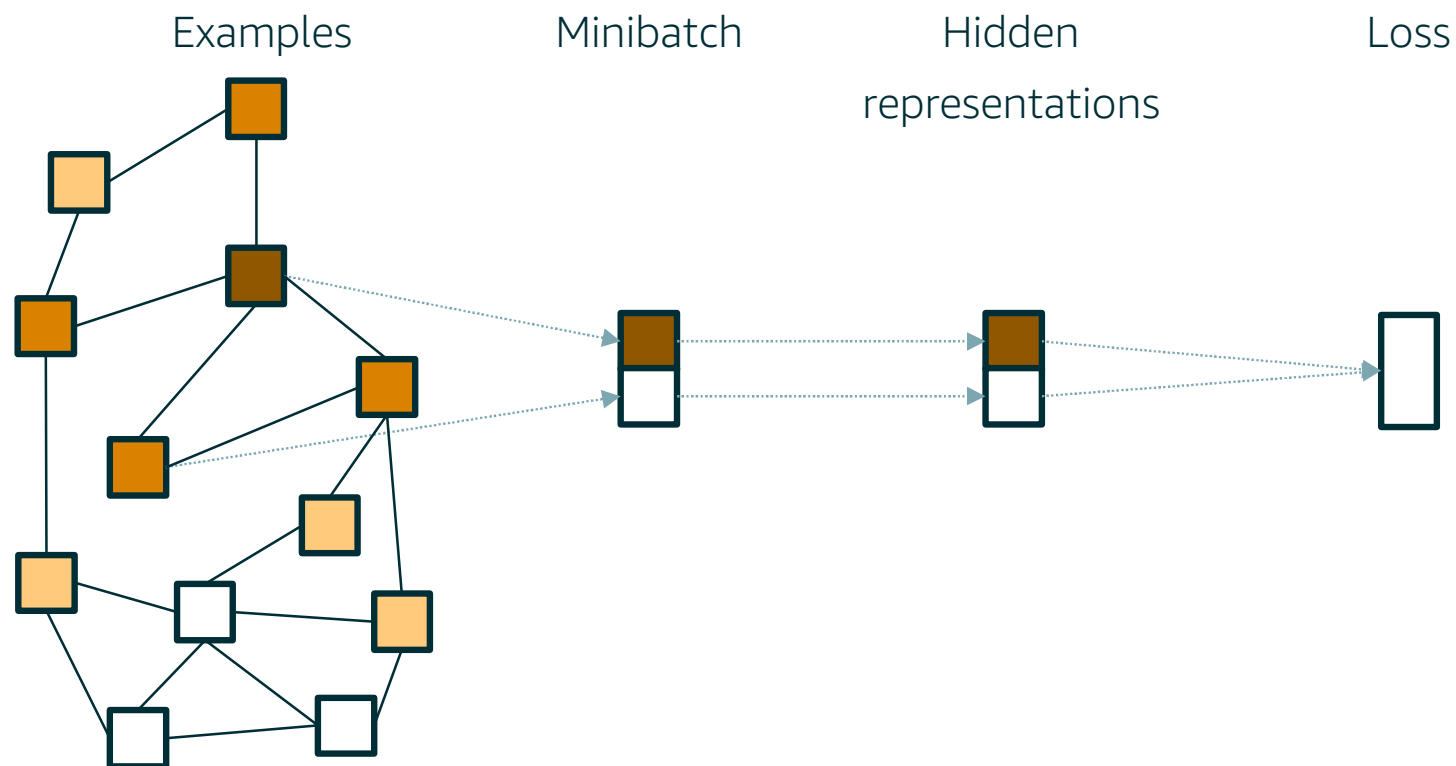
How about using what is necessary only?

Examples   Minibatch   Hidden representations   Loss

A small minibatch may still need a lot of nodes for input.

Neighbor Sampling (1-layer)

Examples   Minibatch   Hidden representations   Loss
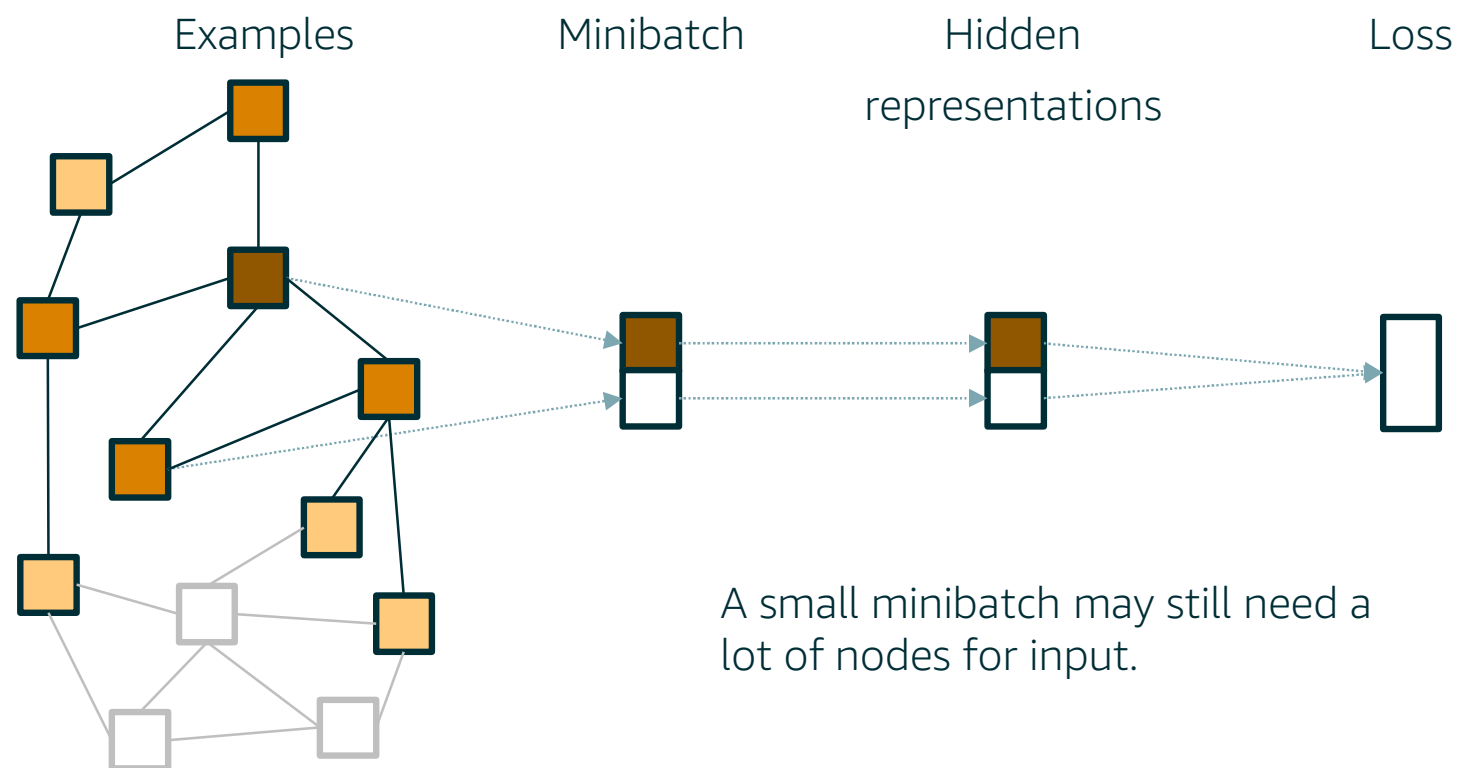
Neighbor Sampling (1-layer, 2 neighbors per node)

Examples | Minibatch | Hidden representations | Loss
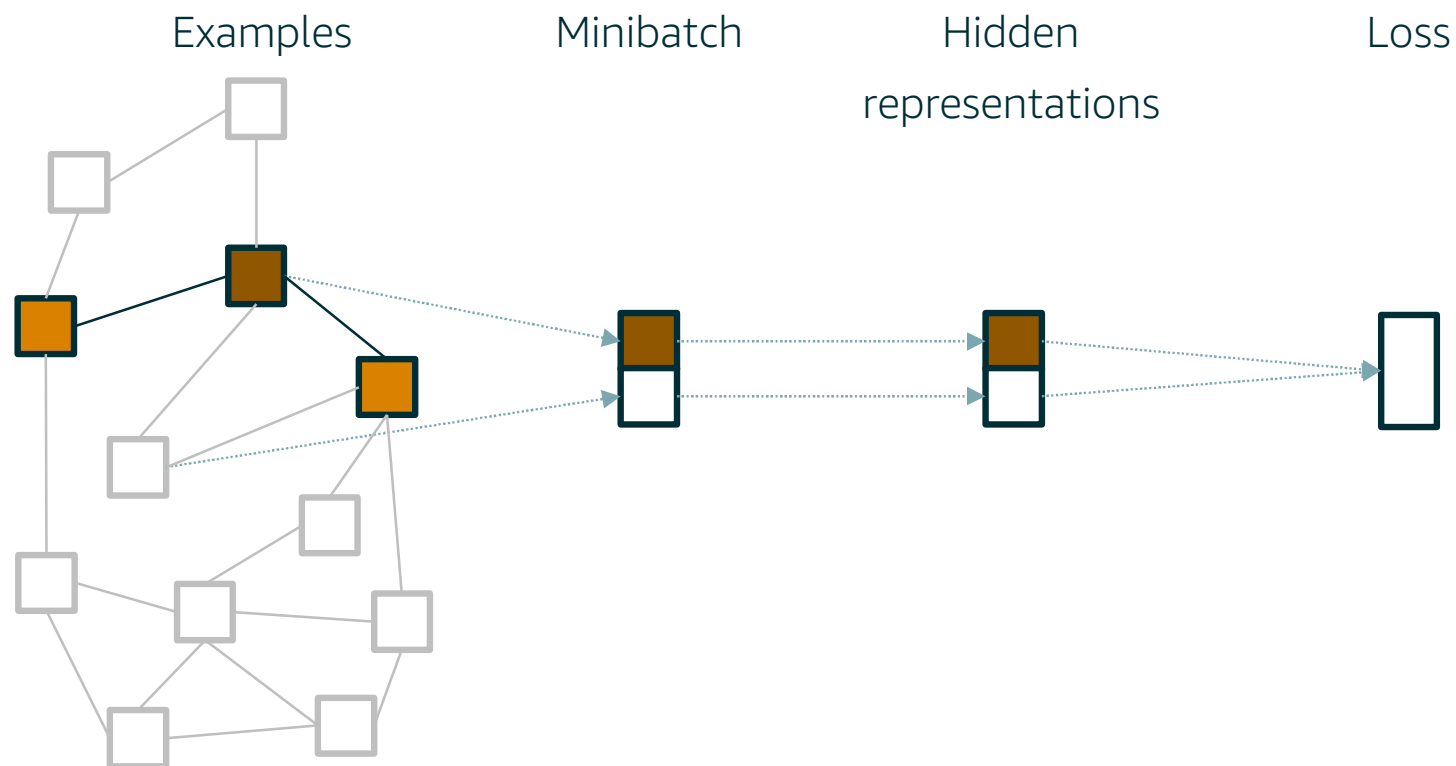
Neighbor Sampling (2-layer, 2 neighbors per node)

Examples
Minibatch
Hidden representations
Loss

Amazon Confidential

Layerwise Sampling (1-layer)

Examples   Minibatch   Hidden representations   Loss

Layerwise Sampling (1-layer, 2 nodes)

Examples   Minibatch   Hidden representations   Loss
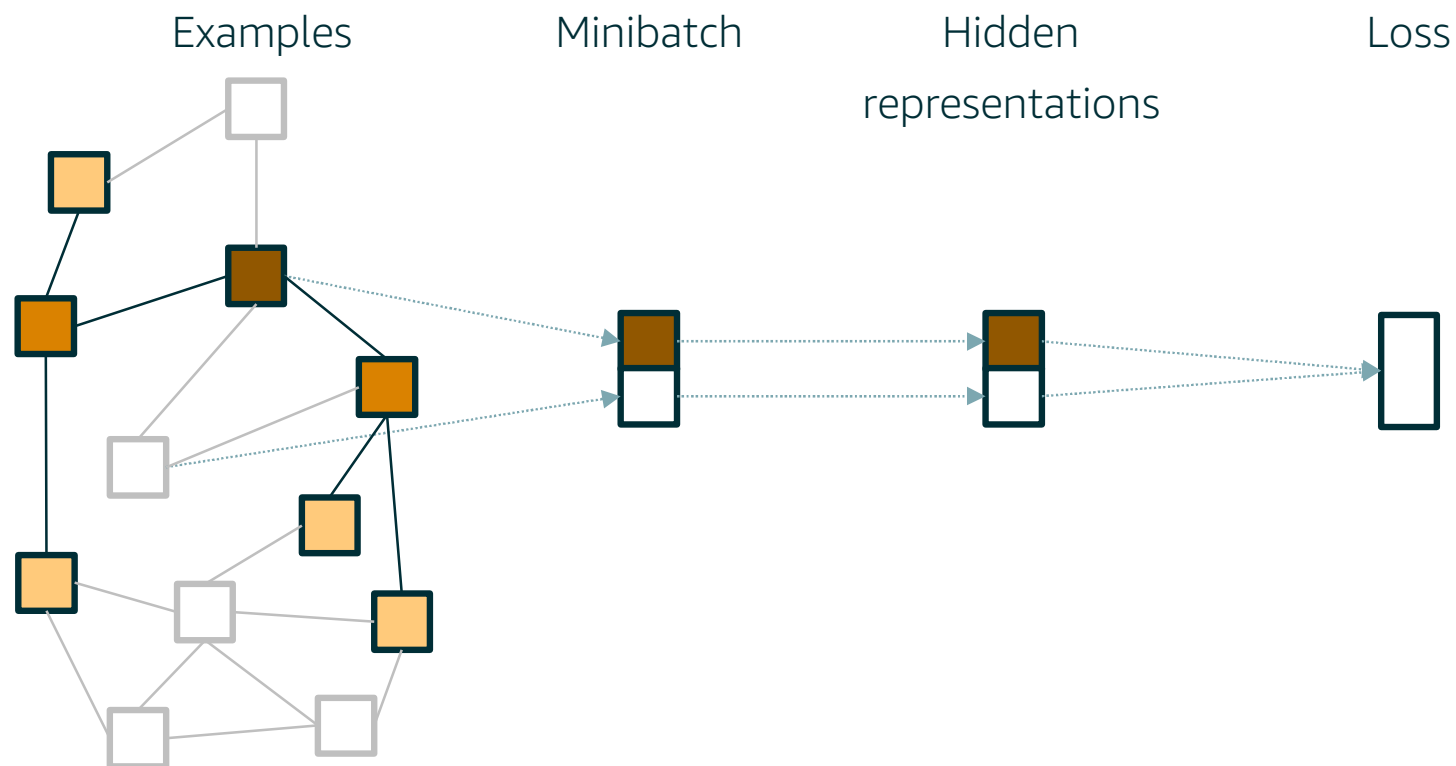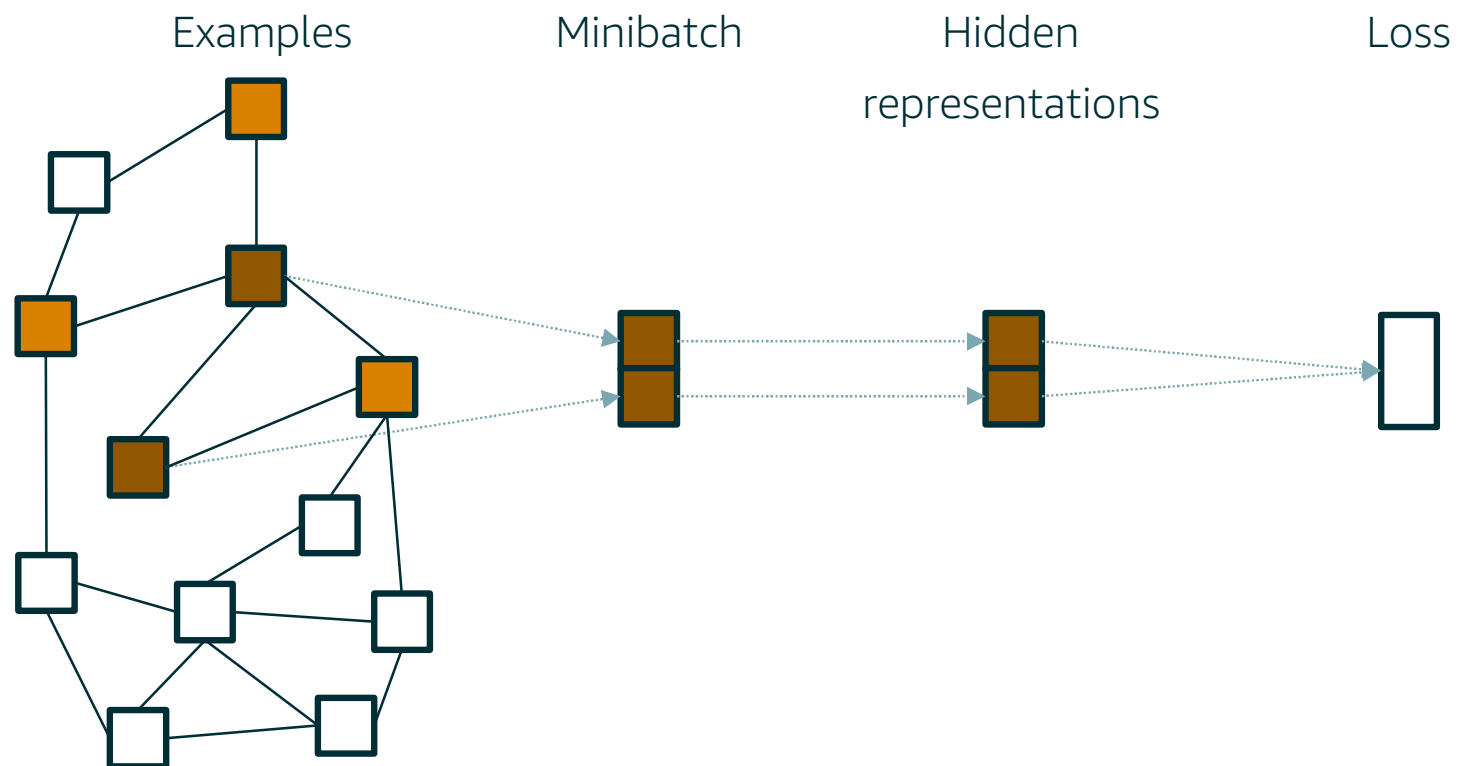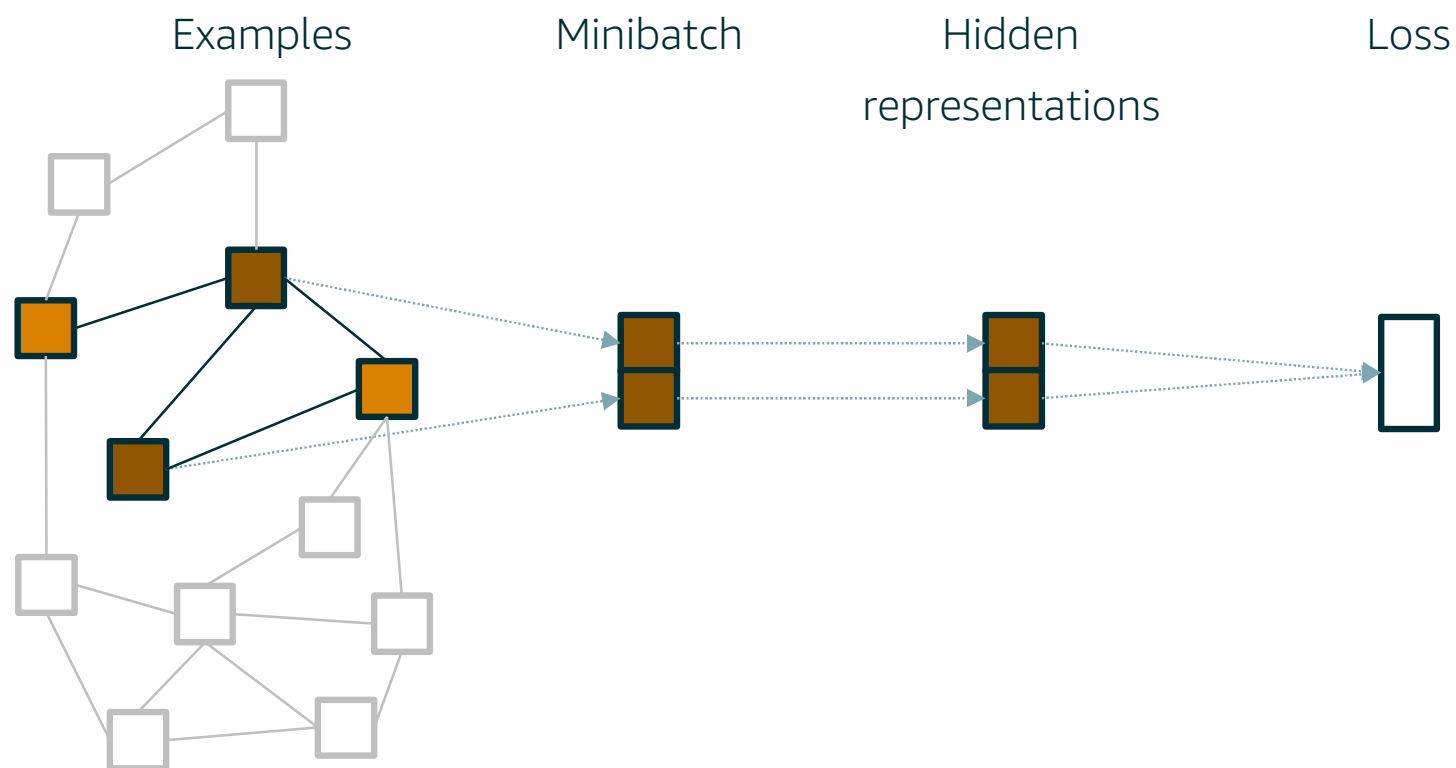
Layerwise Sampling (2-layer, 2 nodes per layer)

Examples Minibatch Hidden representations Loss

Examples:
FastGCN (Chen et al.)
LADIES (Hu et al.)
MVS-GNN (Cong et al.)

Subgraph Sampling

Examples   Minibatch   Hidden representations   Loss

Examples:
GraphSAINT (Zeng et al.)
HGT (Hu et al.)

Notebook Time!

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