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import networkx as nx
import torch
from torch_geometric.data import Data

# Create a small social graph
G = nx.Graph()
edges = [(0,1), (1,2), (2,0),      # normal users community
          (3,4), (4,5), (5,3)]      # suspicious cluster - تم تصحيح الخطأ هنا
G.add_edges_from(edges)

# One-hot node features (6 nodes, 6-dimensional)
num_nodes = 6
features = torch.eye(num_nodes, dtype=torch.float)

# Node labels: first 3 normal (0), last 3 bots (1)
labels = torch.tensor([0,0,0, 1,1,1], dtype=torch.long)

# Convert to PyG Data
edge_index = torch.tensor(list(G.edges())).t().contiguous()
# Make edges bidirectional for undirected graph
edge_index = torch.cat([edge_index, edge_index.flip(0)], dim=1)
data = Data(x=features, edge_index=edge_index, y=labels)

# Define train/test masks (e.g., train on 4 nodes, test on 2 nodes)
data.train_mask = torch.tensor([1,1,1,1,0,0], dtype=torch.bool)
data.test_mask = torch.tensor([0,0,0,0,1,1], dtype=torch.bool)

print("Graph created successfully!")
print(f"Number of nodes: {data.num_nodes}")
print(f"Number of edges: {data.num_edges}")
print(f"Number of features: {data.num_features}")
```

the output:

```
PS C:\Users\ LapStore\ Desktop> &
'c:\Users\ LapStore\ AppData\ Local\ Programs\ Python\ Python312\ python.exe'
'c:\Users\ LapStore\ .vscode\ extensions\ ms-python.debugpy-2025.10.0-win32-x64\ bundled\ lib
s\ debugpy\ launcher' '64591' '--' 'C:\Users\ LapStore\ Desktop\ gcn (1).py'
Graph created successfully!
Number of nodes: 6
```

Number of edges: 12
Number of features: 6
PS C:\Users\LapStore\Desktop>

