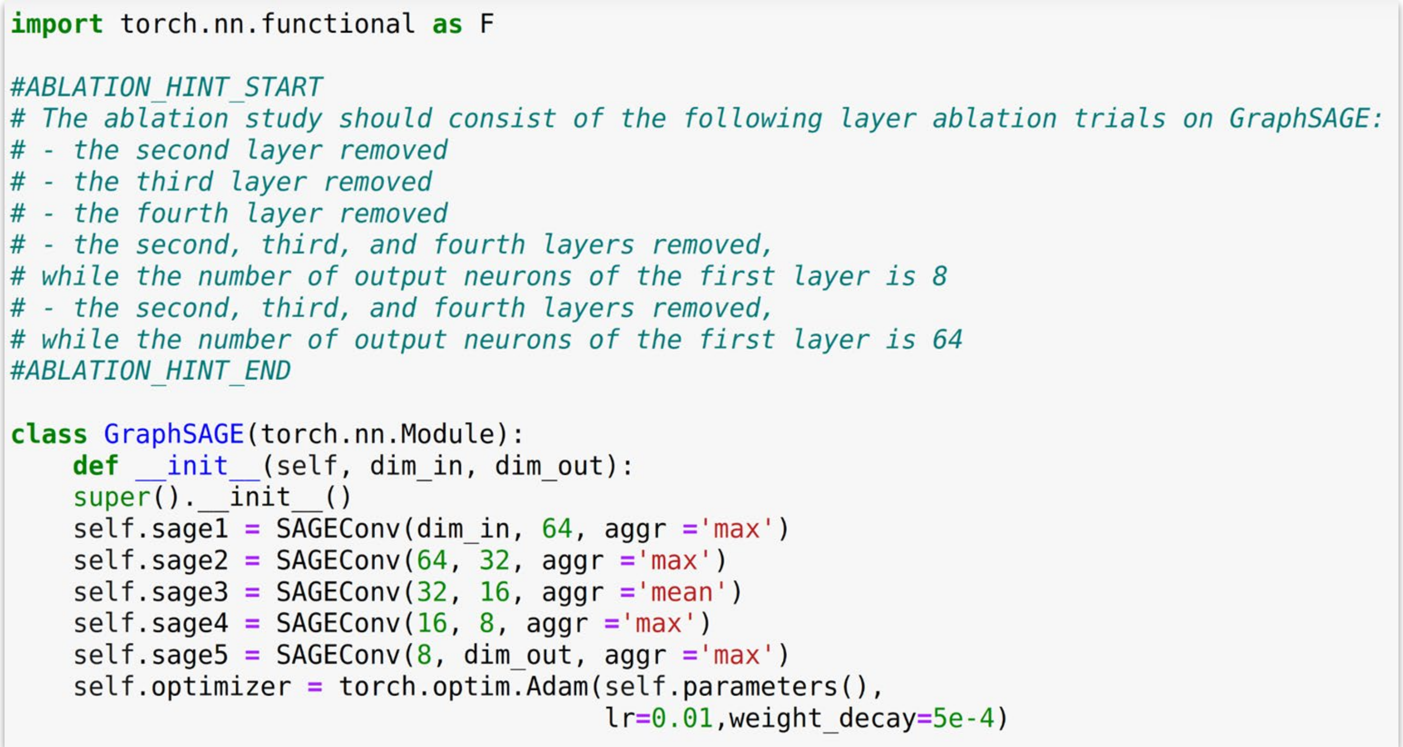
AblationMage utilizes LLMs for generation of ablation study artifacts using user-provided *annotations*



```
import torch.nn.functional as F

#ABLATION_HINT_START
# The ablation study should consist of the following layer ablation trials on GraphSAGE:
# - the second layer removed
# - the third layer removed
# - the fourth layer removed
# - the second, third, and fourth layers removed,
# while the number of output neurons of the first layer is 8
# - the second, third, and fourth layers removed,
# while the number of output neurons of the first layer is 64
#ABLATION_HINT_END

class GraphSAGE(torch.nn.Module):
    def __init__(self, dim_in, dim_out):
    super().__init__()
    self.sage1 = SAGEConv(dim_in, 64, aggr ='max')
    self.sage2 = SAGEConv(64, 32, aggr ='max')
    self.sage3 = SAGEConv(32, 16, aggr ='mean')
    self.sage4 = SAGEConv(16, 8, aggr ='max')
    self.sage5 = SAGEConv(8, dim_out, aggr ='max')
    self.optimizer = torch.optim.Adam(self.parameters(),
                                      lr=0.01,weight_decay=5e-4)
```

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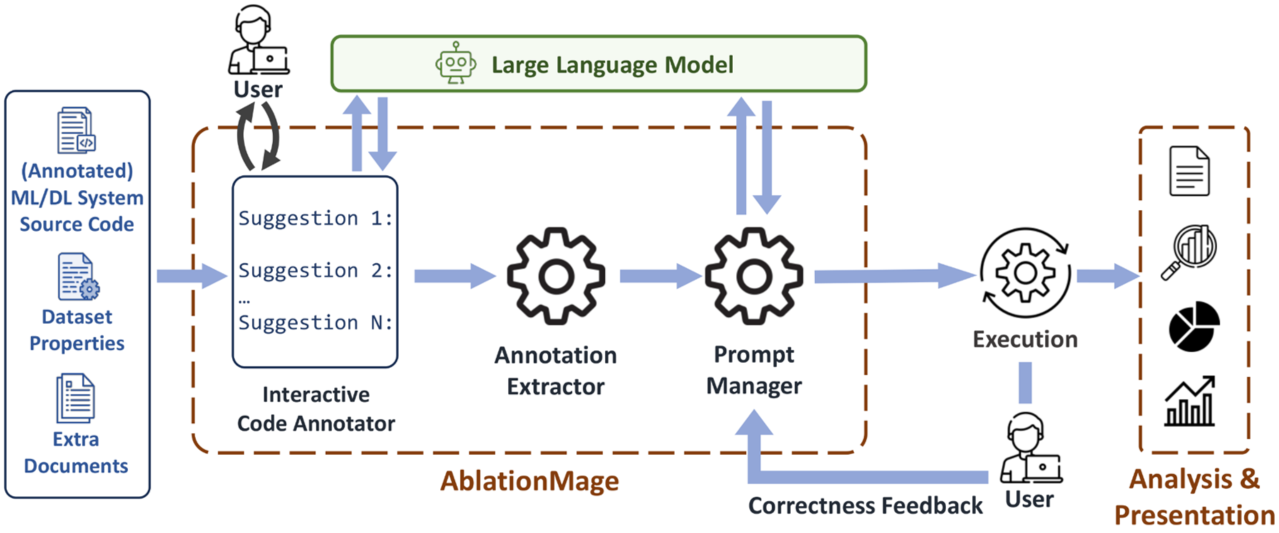

(Annotated) ML/DL System Source Code

Dataset Properties

Extra Documents

User

Large Language Model

Suggestion 1:

Suggestion 2:

…

Suggestion N:

Interactive Code Annotator

Annotation Extractor

Prompt Manager

AblationMage

Execution

Correctness Feedback

User

Analysis & Presentation

System Prompt

You are assisting me in creating code for ablation studies. I'm going to give you a runnable and correct script that trains a machine learning model. In the script, there may be lines that have a comment in the form of: **#ABLATABLE_COMPONENT**, These are related to ablation studies. Also, they might be comment blocks that start with **#ABLATION_HINT_START** and end with **#ABLATION_HINT_END**, these contain a description of the desired ablation study. When you see lines that have #ABLATABLE_COMPONENT or blocks of commented out lines enclosed in #ABLATION_HINT_START and #ABLATION_HINT_END, modify the original script in such a way that the mentioned component is removed but the code is still runnable and correct.

...

Attached Files:

Annotated Source Code

Additional Documents

LLM Agent Response

I'll help you create a modified version of the script that implements the ablation study for the GraphSAGE layers. The study will test different architectures by removing layers and varying the number of neurons. Here's the complete modified code with ablation study capabilities:

```python
.....
if model_config['type'] == 'full':
    self.sage1 = SAGEConv(dim_in, 64, aggr='max')
    self.sage2 = SAGEConv(64, 32, aggr='max')
    self.sage3 = SAGEConv(32, 16, aggr='mean')
    self.sage4 = SAGEConv(16, 8, aggr='max')
    self.sage5 = SAGEConv(8, dim_out, aggr='max')
elif model_config['type'] == 'no_layer2':
    self.sage1 = SAGEConv(dim_in, 64, aggr='max')
    self.sage3 = SAGEConv(64, 16, aggr='mean')
    self.sage4 = SAGEConv(16, 8, aggr='max')
    self.sage5 = SAGEConv(8, dim_out, aggr='max')
.....
```

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