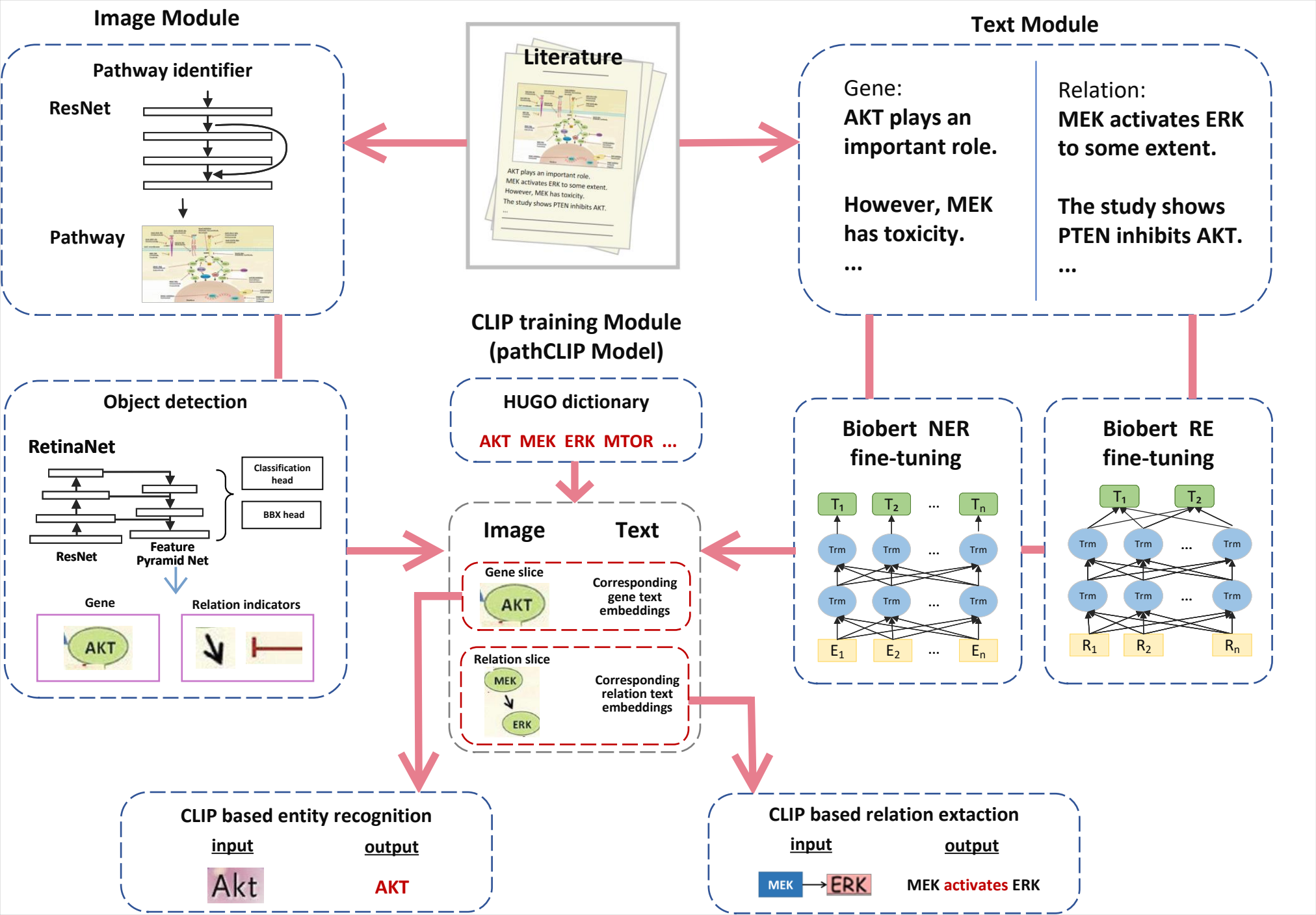
Image Module
Pathway identifier
ResNet
Pathway
Literature
AKT plays an important role.
MEK activates ERK to some extent.
However, MEK has toxicity.
The study shows PTEN inhibits AKT.
Text Module
Gene:
AKT plays an important role.
However, MEK has toxicity.
...
Relation:
MEK activates ERK to some extent.
The study shows PTEN inhibits AKT.
...
CLIP training Module
(pathCLIP Model)
Object detection
RetinaNet
Classification head
BBX head
ResNet
Feature Pyramid Net
Gene
Relation indicators
AKT
HUGO dictionary
AKT MEK ERK MTOR ...
Image
Text
Gene slice
AKT
Corresponding gene text embeddings
Relation slice
MEK
ERK
Corresponding relation text embeddings
Biobert NER fine-tuning
Biobert RE fine-tuning
Trm
CLIP based entity recognition
input
output
Akt
AKT
CLIP based relation extaction
input
output
MEK
ERK
MEK activates ERK