Heterogeneous Graph Transformer with Multi-Source Feature Extraction for circRNA-Drug Association Prediction

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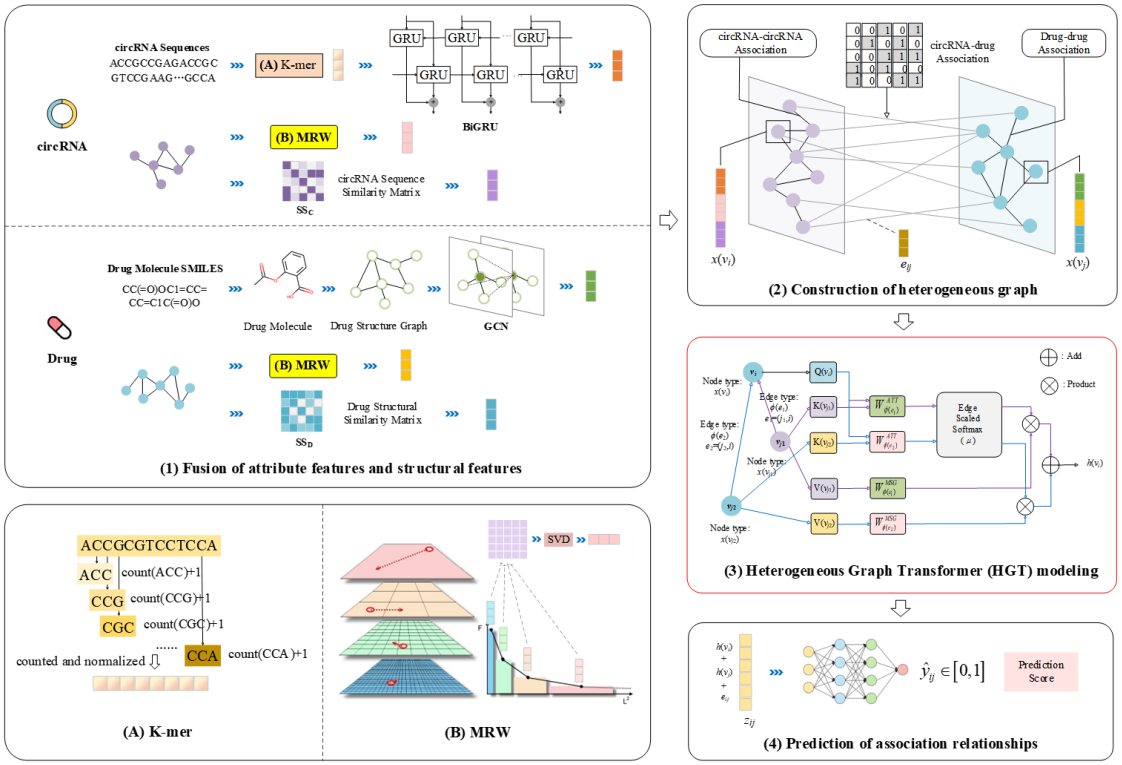
Problems & Ideas

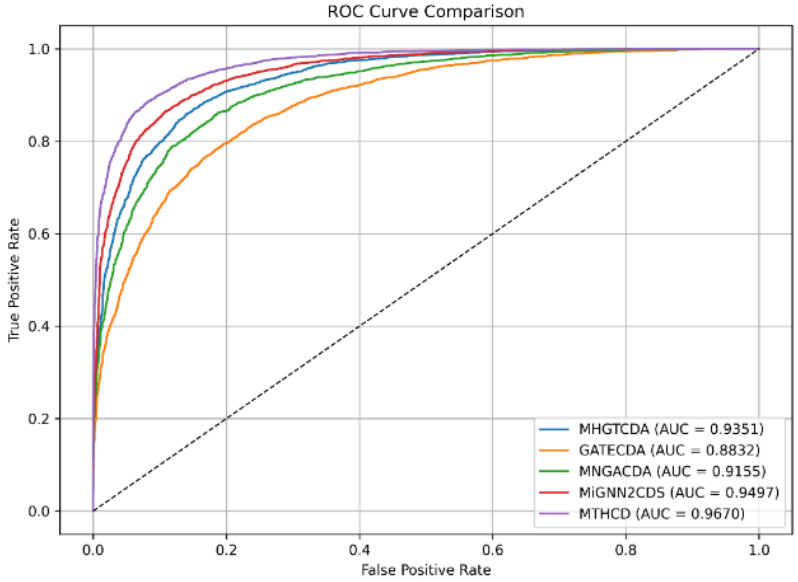
- Problems with traditional circRNA-drug association prediction methods:
  - Limitations still exist in integrating multi-source information and mining potential high-order semantic relationships.
  - Current latent feature extraction remains insufficient.
- Ideas: Standardized circRNA sequence data were organized and a multi-pathway feature extraction mechanism was designed for HGT (Hyperbolic Graph Transformer) modeling.

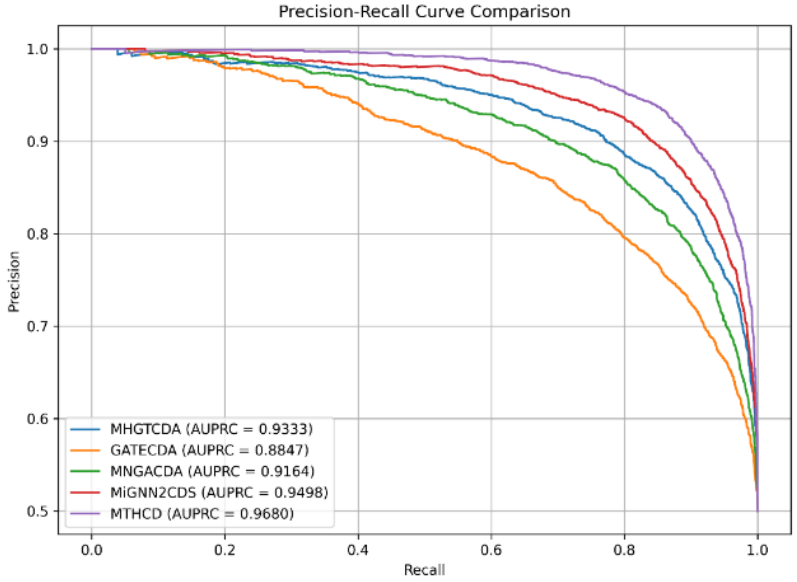


The framework of MTHCD model

Main Contributions

- Contributions:
  - Organized and standardized circRNA sequence data;
  - Designed a multi-pathway feature extraction mechanism;
  - Constructed a circRNA-drug heterogeneous graph structure incorporating bidirectional edges;
  - Introduced a Heterogeneous Graph Transformer (HGT) for cross-type node modeling.





Comparison results of ROC curves and PR curves of MTHCD with other methods under five-fold CV