Fig. 1: Timeline of Graph Neural Networks

Fig. 2: Example 1 of Application of the VarMisuse Task in C#

Fig. 3: Example 2 of Application of the VarMisuse Task in C#

Fig. 4: An Example of a Graph

Fig. 5: Simple Abstract Syntax Tree

Fig. 6: Modified Abstract Syntax Tree that Represent Programs

Fig. 7: Graph Structure and Messages For Each Node

Fig. 8: Message Passing And Aggregation by Nodes via a Recurrent Unit

Fig. 9: Unrolled Effect Of the Graph Where Nodes Become Positionally Aware

Fig. 10: Formula for the GGNN State Update Per Node

Fig. 11: Formula for the RGCN Node State Update Per Node

Fig. 12: Data Transformation Pipeline

Fig 13: Example Representation of the Next Token Of the Directed Graph

Fig. 14: Listing of all the Directories From the Graph Data Set

Fig. 15: Typical Directory Str2ucture of Data From A Repository

Fig 16: Example of a Record of the RepositoryInfo

Fig 17: All Repositories Considered

Fig. 18: CommonMark.NET Details

Fig. 19: Dapper Details

Fig. 20: List of Models

Fig. 21: List of Gated Graph Neural Networks

Fig. 22: List of Tasks And Hyperparameters

Fig. 23: List of Scripts

Fig. 24: Mockup of the Pipeline

Fig. 25: Data Needed For Each of the Experiments

Fig. 26: Training Command Line Args

Fig. 27: Command Line Output For Training

Fig. 28: Testing Command Line Arguments

Fig. 29: Testing Terminal Output

Fig. 30: Final Results