Abstract

Anticoagulant drugs such as warfarin are essential in reducing the risk of blood clots and preventing serious conditions such as heart disease and stroke. Proper monitoring and understanding of complex drug interactions is essential for warfarin, as small dosage changes can have a significant impact on its effectiveness and safety. A recent study has developed a computational system that can predict drug interactions, with a primary focus on warfarin. This innovative system uses advanced technologies such as Graph Convolutional Network (GCN), Bi-Directional Gated Recurrent Unit (Bi-GRU) Attention, and joint attention layers. These tools are adept at analyzing structural and sequential data, thus improving and the ability to classify chemical interactions between warfarin and other drugs that may cause adverse effects. The GCN Bi-GRU Attention model, the main result of this study, has a remarkable 98% accuracy in predicting drug interactions. This breaktrough not only deepens the understansding of warfarin interactions, but also paves the way for predicting interactions with other drugs, potentially improving the safety and efficacy of drug therapy. The implications of this study are significant in bioinformatics and pharmacology, offering enormous benefits in drug development and patient care. In addition, this study marks an important step in improving the precision of medical care, which highlights the transformative impact of such research in healthcare.

Keywords: ***Graph Convolutional Network (GCN), Bi-Directional Gated Recurrent Unit (Bi-GRU) Attention,Warfarin***