In today’s world, most financial transactions have moved online. People are using mobile wallets, internet banking, UPI, and other digital platforms more than ever before. While this shift has made things faster and more convenient, it has also opened the door for more financial fraud. Criminals are getting smarter, using advanced tricks to steal money — from simple identity thefts to well-organized money-laundering scams. With billions of transactions happening every day around the world, it has become extremely important to make sure each one is secure and genuine.

To deal with this growing problem, These systems help identify strange or suspicious patterns in how money moves from one account to another. Earlier fraud detection systems mostly used fixed rules or simple ML models trained only on past data. But real-world fraud changes all the time - what worked yesterday might not work today. Also, many of the existing models can’t handle different types of data at once, like texts written by users, time-based patterns, and the connections between different accounts.

This research solves those issues by introducing a hybrid deep learning model that brings together three powerful techniques: Graph Neural Networks (GNNs), Long Short-Term Memory (LSTM) networks, and Bidirectional Encoder Representations from Transformers (BERT). Each one plays a unique role. GNNs help us understand how different accounts or transactions are connected — like a network — which can help uncover hidden fraud rings. LSTMs look at the order and timing of transactions to spot anything unusual in behaviour over time. BERT, which is a modern language model, reads and understands the text descriptions of transactions, picking up on words or phrases that might suggest something suspicious.

By combining these three models, our system can work with all kinds of data at once — numbers, timelines, and written texts — which makes the detection process much stronger and more accurate. This is something traditional models usually can’t do well. To make sure our model works in different situations, we’ve tested it on five different financial fraud datasets, each with different sizes and types of transactions. This helps the model learn better and handle a wider variety of fraud cases.

So, this project offers a smart and flexible system to detect financial fraud by using the combined power of GNN, LSTM, and BERT. By looking at how transactions are connected, how they behave over time, and what’s written in their descriptions, the model can spot fraud more effectively. This approach takes us a step closer to building safer and more trustworthy digital financial systems in today’s fast-changing world.