8. Proposed Modification Scheme

➢ Modified TCP SACK

Base algorithm discussed in previous section shows an excellent improvement in performance for arbitrary loss. It also shows backward compatibility in case of severe congestion and performs same as original TCP SACK. So, it proves that it is able to identify the cause of packet loss and acts accordingly [46], [47].

One more modification can be integrated in the same algorithm to perform even superior. This can be done by observing other performance indicators i.e. parameter like RTT. When error rate increases, due to loss and its recovery, RTT also increases. In case of congestion, due to bottleneck at intermediate routers, RTT increases. But there is an enormous variation between deviations in RTT for both the cases [48]. It takes a large amount of time to release the congestion and to recover from the congestion loss whereas it takes a smaller amount of time to recover from loss due to link arbitrary errors. With this discrimination, by observing RTT deviation continuously one can differentiate between loss due to congestion and loss due to transmission errors [42]. Through practical observations RTT deviation can be extended to certain limit of tolerance and accordingly decision can be taken. Moreover, at the time of second loss in a single window of data can be treated as a random loss if RTT deviation is within tolerance limit. This action can be applied to all the losses occurring in single window of data in case of transmission errors. This can help in fighting against bursty errors also [49], [50]. The extended flow chart accommodating this strategy is shown in Figure 8.1.
Figure 8.1: Flow Chart of Modified TCP SACK
Except standard variable used in TCP code, other terminologies used in base algorithm are assigned a new names. SACK_OK is named as S_M_LOSS which indicates single or multiple losses in a single window of data. Distance parameter is renamed as GAP. RTT deviation is the new terminology used to see deviation of RTT to observe current status network and link condition and take decision accordingly. Delayed fast recovery is named as Postponed fast recovery.