On Maximizing the Number of Certain three vertex Subgraphs in a Graph

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For a graph G, let $\#P_3(G)$ denote the number of subgraphs isomorphic to P_3- path on three vertices, ${}^*P_3(G)$ denote the number of induced subgraphs isomorphic to P_3, and $S_3(G)$ denote the number of induced connected subgraphs on three vertices in G. We will review known and recent results on graphs G which maximizes $\#P_3(G)$, ${}^*P_3(G)$, and $S_3(G)$. These graphs are known to be most reliable with respect to appropriate reliability measures when the probability of edge/vertex being operational is near zero.