Graph Density

Moshe Rosenfeld
Universoty of washingto
Tacoma Washington, USA
moishe@u.washington.edu

Random graphs are an important topic in graph theory with many applications in other fields. One model assigns a probably to every edge to decide whether to add it to the graph. This is the model I used in the program. The program steps through all pairs $\{i, j\}$ in case of a simple or weighted simple graph, generates a random number in the range $1 \ldots 10$ and if the number is less than the given input (which called density) it creates this edge. The effect is generating a graph with about 30% of the edges incident with every vertex to be included.

Another model of random graphs assigns to all graphs with n vertices abd k edges the same probablilty.

In both models we try to answer questiion such as do (almost) all graphs with say $0.1n^2$ edges have property P? (bipartite, are connected, are Hamiltonian, etc.). The name density used in the generation program is just a name of an identifier in the Java program and is used as described above.