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Project Idea Title:

Applying Evolutionary Algorithm to generate Adversarial Graph on SybilSCAR (Collective Classification Algorithm)

Summary:

We aim to use an evolutionary algorithm to achieve an optimal adversarial graph in which SybilSCAR fails to classify Sybil accounts correctly. In summary, we will mutate a given graph (dataset from Facebook, etc.) in each number of iterations (generations) to evolve the graph to an adversarial graph.

Background:

Evolutionary algorithms automatically derive an optimal gene through mutating the gene through numbers of generations. Genes are given a fitness score which is the basis of choosing whether the gene is left for further mutations or the gene is thrown away.

SybilSCAR is a tool that classifies Sybil (fake) accounts based on a given graph (network of accounts). However, attackers manipulate graphs to disturb such tools to correctly detect a sybil account.

Objective:

Our objective is to generate numbers of adversarial graphs in which SybilSCAR fails to detect sybil accounts correctly.

Expecting to Learn:

We expect to learn:

- to apply evolutionary algorithms on Sybil account detection.
- LNP-based method on detecting Sybil accounts (Local Rule based Propagation)
- Which type of mutations generate strong adversarial graphs

Reference:

B. Wang, L. Zhang, and Z. Gong, SybilSCAR: Sybil Detection in Online Social Network via Local Rule based Propagation