Internship topic: Algorithms for subgraph density counting in small world graphs

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1 Context

The field of graph mining has produced several interesting algorithms for pattern mining. Typically, for counting the frequency of a pattern in a network (graph), generic counting algorithms are used.

At the same time, data graphs are typically not random. Many real-world graphs are "small world graphs" in the sense that they have a rather high clustering coefficient (the friend of my friend is more likely to be my friend than an randomly choosen person).

2 Objective

This project will research whether it is possible to exploit the small world properties of data graphs in pattern density counting, and if so how much is the benefit that can be obtained.

3 More information

This project will involve

- Study literature on small world graphs and conjunctive query evaluation.
- Explore analytically the expected benefits of exploiting higher clustering coefficients.
- If time allows, perform an empirical validation.

4 Requirements

A good background in algorithms and graph theory is desirable.