On Dynamic Graphs

Eva Rotenberg ✉ ⓘ
Technical University of Denmark, Lyngby, Denmark

── Abstract ──

In graph algorithms, many questions about a graph can be answered in time proportional to the size of the input, and such *linear time algorithms* are considered the epitome of efficiency. However, when the graph changes slightly, e.g. by the insertion or deletion of an edge or a vertex, it is undesirable to consider the entire input again. Rather, one would wish to keep some of the partial answers to questions about the old graph, and re-use them when computing answers to questions about the resulting graph. The art of handling such changes is studied in *dynamic graph algorithms.*

In this talk, we will see some examples of ideas and techniques for efficiently maintaining knowledge about a dynamically changing graph. We will consider classical and natural graph properties such as connectivity and planarity, and we will focus on deterministic algorithms.