Automatic layout is an important tool for the efficient use of graphical models in a model-driven engineering (MDE) context. Since the 1980s, research on graph layout methods has led to a multitude of different approaches, and several free software libraries for graph layout are available. However, today’s practically relevant MDE tools hardly reflect this diversity. This thesis aims to support the use of automatic graph layout in such tools.

A special focus is on the requirements of data flow models, where constraints on the positioning of ports and the routing of hyperedges pose additional challenges. These constraints are approached with extensions of the layer-based graph layout method. Furthermore, we discuss an infrastructure for managing collections of layout algorithms, allowing to flexibly specify layout configurations. These concepts are implemented in an open-source project based on Eclipse, an extensible platform that is well-known as a Java IDE and also hosts a large number of MDE tools. The presented contributions allow to integrate high-quality automatic layout into these tools with low effort.

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