

Abstract: This bachelor thesis analyses algorithms working with the volume data, especially the triangle or polygon mesh. The results of the analysis are applied in the design of the generic library which can be templated with any implementation of mesh satisfying requirements of the library. The library is written in C++ using the norm C++11 with assistance of the boost library. The choice of the programming language is supported by the strong emphasis on the run-time performance as well as the capabilities of C++ to analyze a templated code during the compile-time. Later in thesis is described the implementation of the library, usage of the algorithms and their concepts, the purpose of the adapters - tools that allow to run algorithms over such an implementation of the mesh that is not properly designed for the algorithm. The technique used in the development of this library can be later applied in the library development, thus adding new algorithms to the library.