

The goal of this thesis was to create an extensible application for packing textures into texture atlases, that could then be used in 2D game development. The extensibility lies in the possibility to create and import plugins, containing algorithms for packing, image processing, and metadata exporting. The ability to extend the application by means of plugins makes our application also suitable for testing of newly invented algorithms or for testing of custom variations of the existing ones.

The software solution includes application with user interface that allows the user to create texture atlases and perform additional processing of the textures. Apart from that, we have also included several default implementations of some of the extensible components, namely: placement algorithms, image processing tools and metadata exporters. The concrete algorithms that are implemented in our solution are (among others): Bottom-left algorithm, Skyline algorithm, Guillotine algorithm and also a genetic-based algorithm. All of that can be used as a starting point when developing new plugins.

In addition to generating texture atlases, our application can also generate metadata, that can then be imported by supported game frameworks or libraries. The process of metadata serialization is also customizable, and so users can supply the application with serializers that produce metadata that matches their needs. Two metadata serializers are included in the application itself.

We have also performed several benchmarks regarding performance measured in both time and area of the resulting texture atlas. The results of benchmarks are included in the text.

