

## ReadMe File

The implementation of the polygon inflation algorithm and inverse polygon inflation algorithm for three component systems

**Important notice: this is an experimental version, developed mainly for the use in the bachelor thesis "On the adaptive polygon inflation algorithm and its implementation" with the submission date 20.06.2018 by Tomass Andersons. The results of this implementation should be checked with FAC-PACK. There is no guarantee of the stability of this program. Some limitations are explained below.**

The program is a MATLAB script. All of the required functions are included at the end of the file. The comments of the script contain details of the implementation and how to work with the program. General information about the algorithm can also be found in the bachelor thesis.

The purpose of this implementation was to test the polygon inflation algorithm with various parameter values. The implementation consists of mainly the polygon inflation algorithm; additional programming for user interface was minimal. Thus, there is no GUI.

Also there is a possibility of a native MATLAB error if all vertices of a polygon have been removed (e.g. if the parameters were chosen incorrectly). An infinite loop is also possible. It is up to the user to recognize and prevent such cases by interpreting the output in command window. It should be noted that this implementation is considerably slower than FAC-PACK.

The Optimization Toolbox is necessary to use this implementation. Also the Global Optimization Toolbox is required for the full functionality. However, if all if-conditions with genetic algorithm `ga` are removed, then it should function without the global optimization toolbox.

The implementation was tested only with some example problems. There are multiple limitations to the algorithm; these include AFS with a point or line sets, AFS with more than three segments and sometimes AFS with one segment. It is explained further in the bachelor thesis.

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