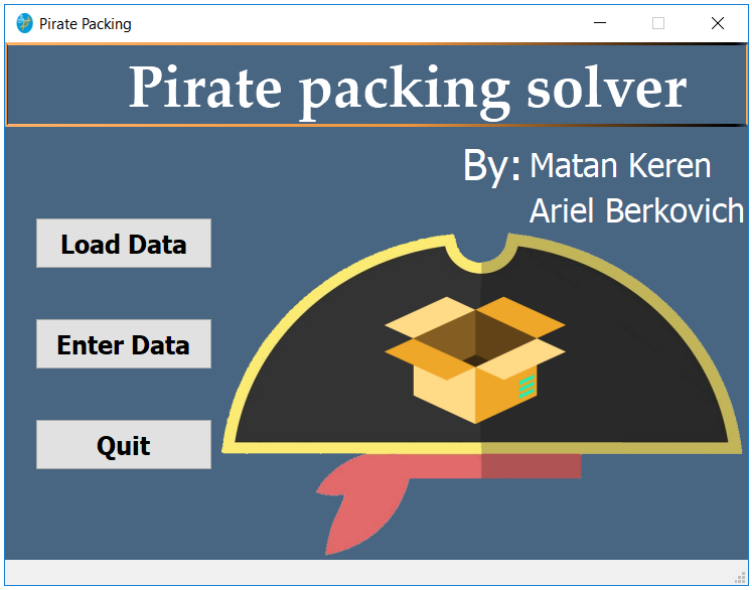
User guide

Important Notes:

When trying to run the program without the installer the **Microsoft Visual C++ 2017 Redistributable** is required to be installed for the program to run
Three **Test configuration** are provided in the **config** folder.

Main Window:



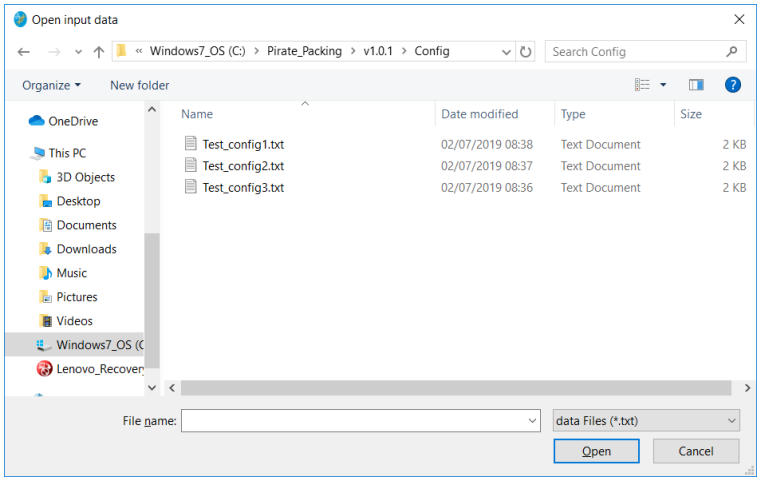
Buttons:

Load Data – opens the load configuration file dialog

Enter Data – Opens the enter data page

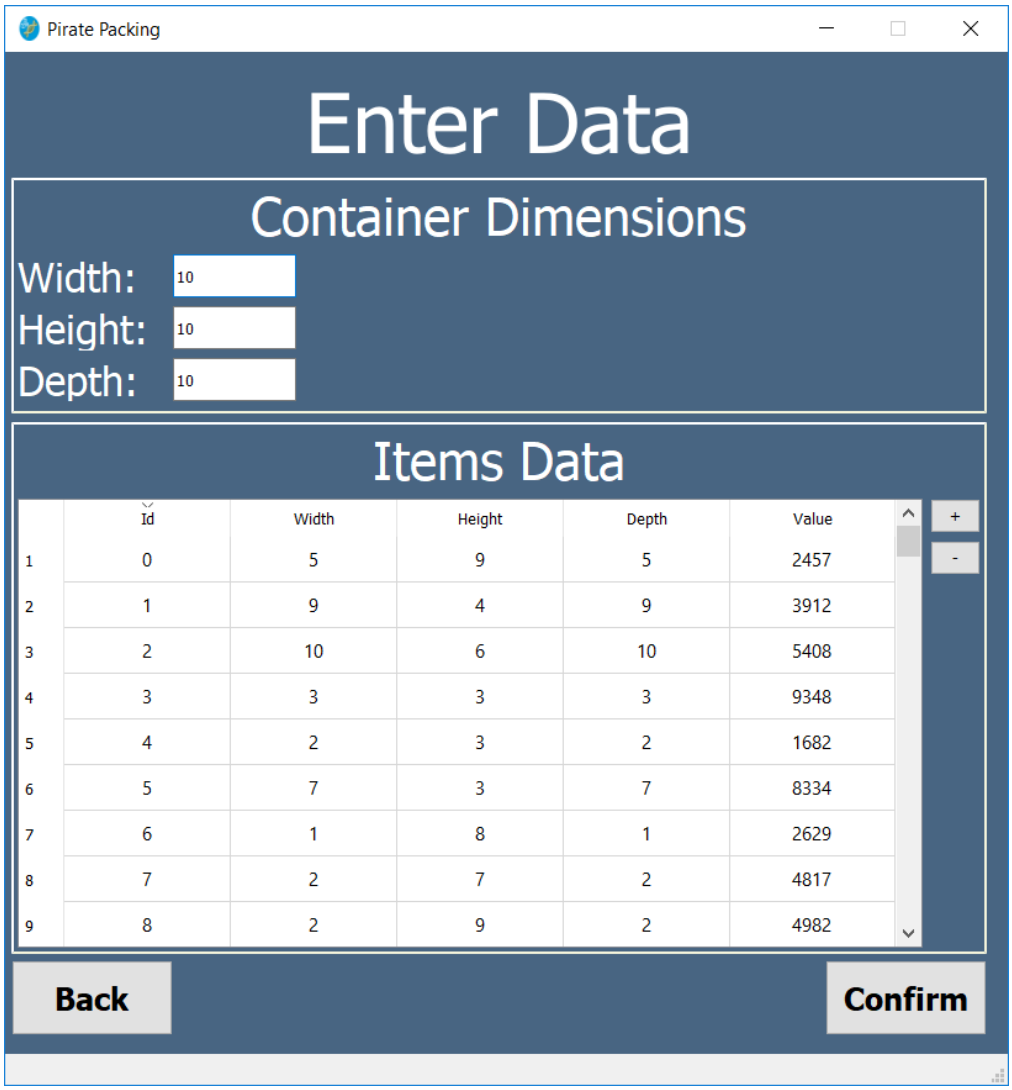
Quit - exits the program

Load configuration file dialog:



Allows selecting what configuration file to load.

Enter Data:



Container Dimensions:

Width – The container width

Height – the container height

Depth – the container depth

Items Data:

The table shows all the items currently added.

Pressing the '+' button or ctrl+enter will create a new row in the table

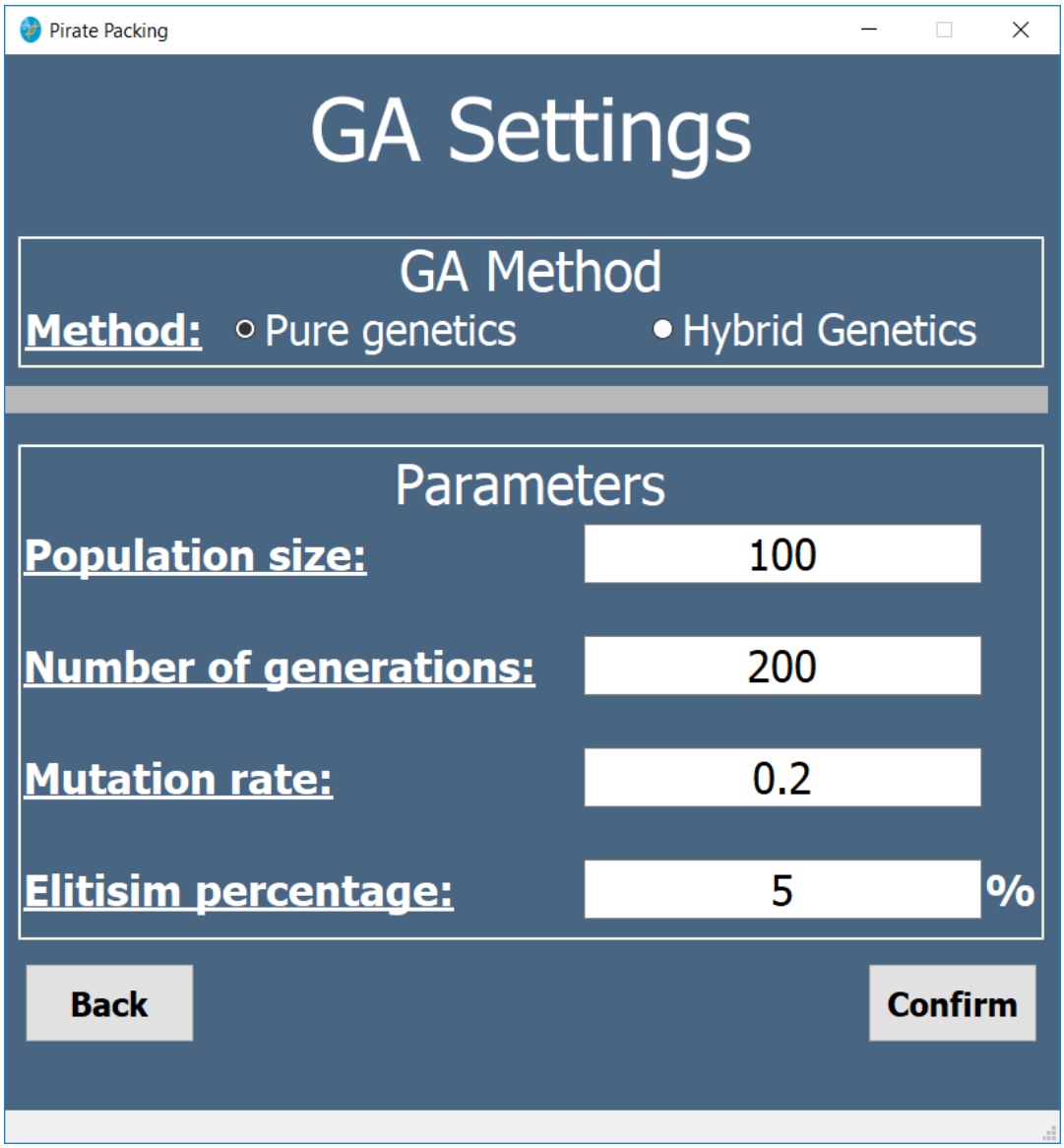
Selecting an entire row and pressing the '-' button or pressing the delete key will delete that line

Buttons:

Back – goes back to main window

Confirm – passes to the GA settings page.

Genetic Algorithm Settings:



Method – what encoding type to use, Pure genetics – Binary encoding or Hybrid genetics – Permutation encoding

Population size – how many creatures in the population

Number of generations - how many generations till the algorithm will stop

Mutation rate - what are the chances for mutation to occur in a newly created child , for example mutation rate of 0.2 means that on average 20% of newly created children will have a mutation in them

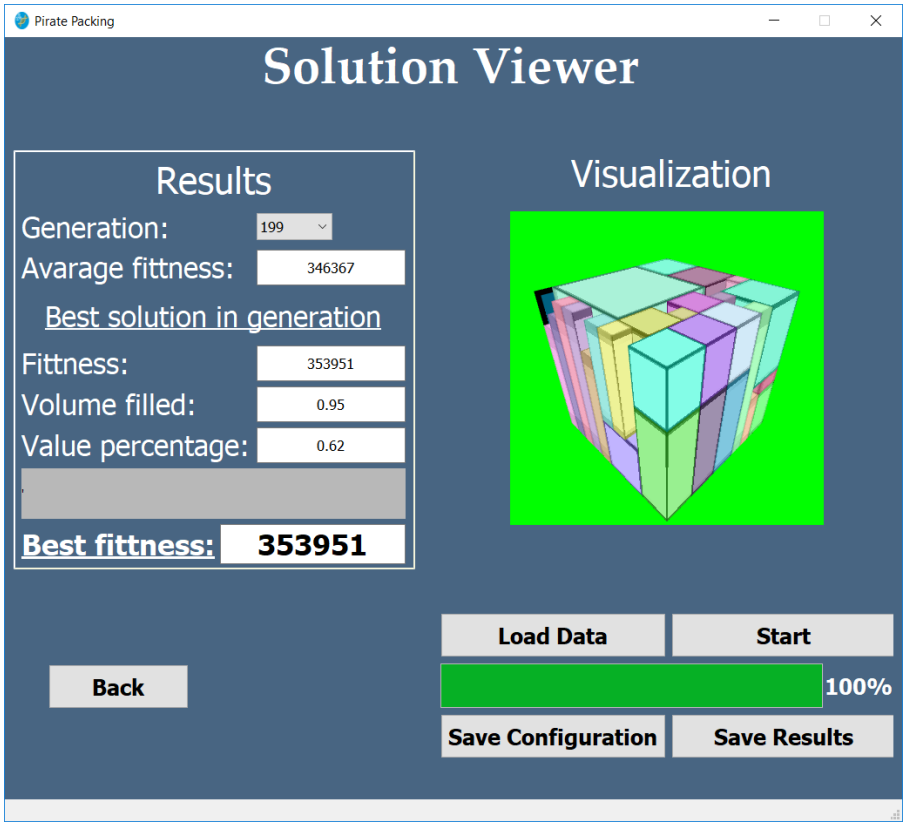
Elitism percentage – how many of the most fit creatures of this generation are guaranteed to pass to the next generation

Buttons:

Back – goes back to enter data page

Confirm – moves to the viewer page

Solution Viewer:



Visualization: visual representation of the current best creature (packing solution), can be rotated by mouse clicking on it and dragging

Results:

Generation – the current generation, can be selected to choose previous generations to see their results

Average fitness – the current generation population average fitness score

Best solution in generation:

Fitness – the current generation best solution fitness score

Volume filled – how much of the overall container volume did the current generation best solution cover

Value percentage – the percentage of value out of the overall configuration value that was entered to the container

Best fitness – the best fitness score out of all the generations

Buttons:

Start/stop – starts/pauses the run of the genetic algorithm

Load data- allows to load a different configuration data from file

Save Configuration – allows to save the current used configuration to file

Save Results – allows to save the GA results to file