Report

Multiscale Modelling Application - specification

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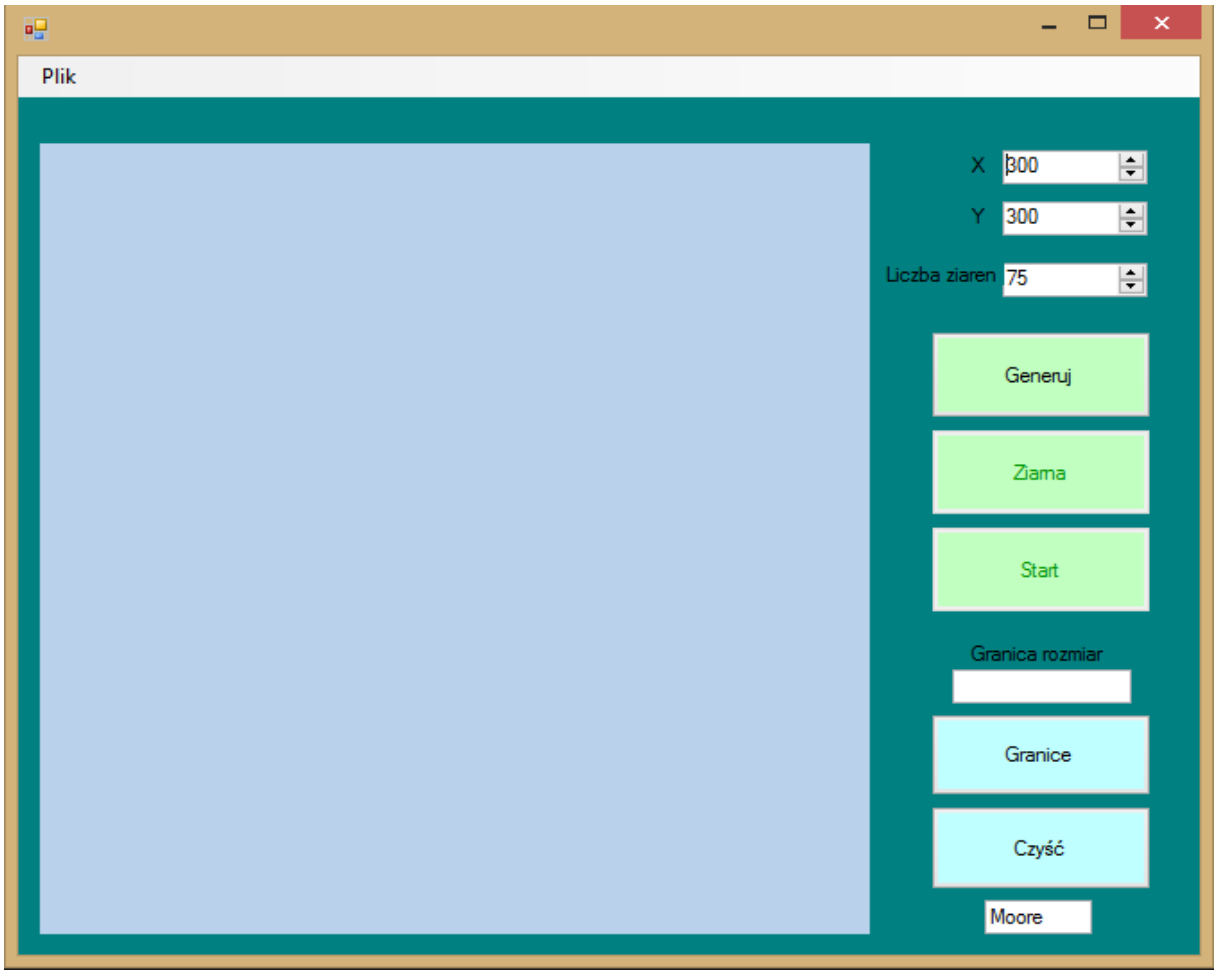
1. GUI description

Multiscale modelling application is a simple grain growth application with GUI. Application is implemented in C# language powered by Microsoft Visual Studio. Frontend interface is designed with Visual Studio tools which are connected with backend logic implemented in C#.

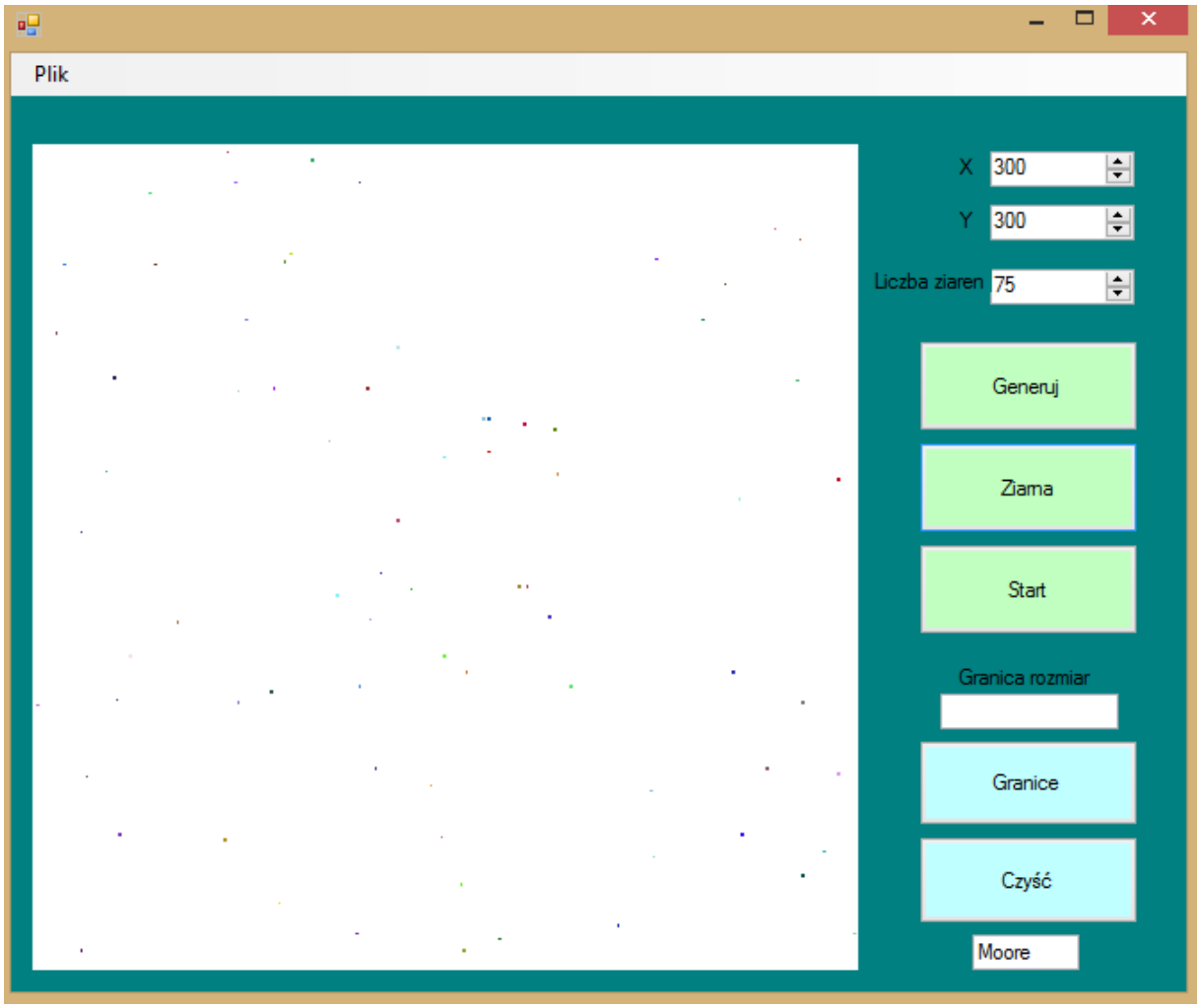


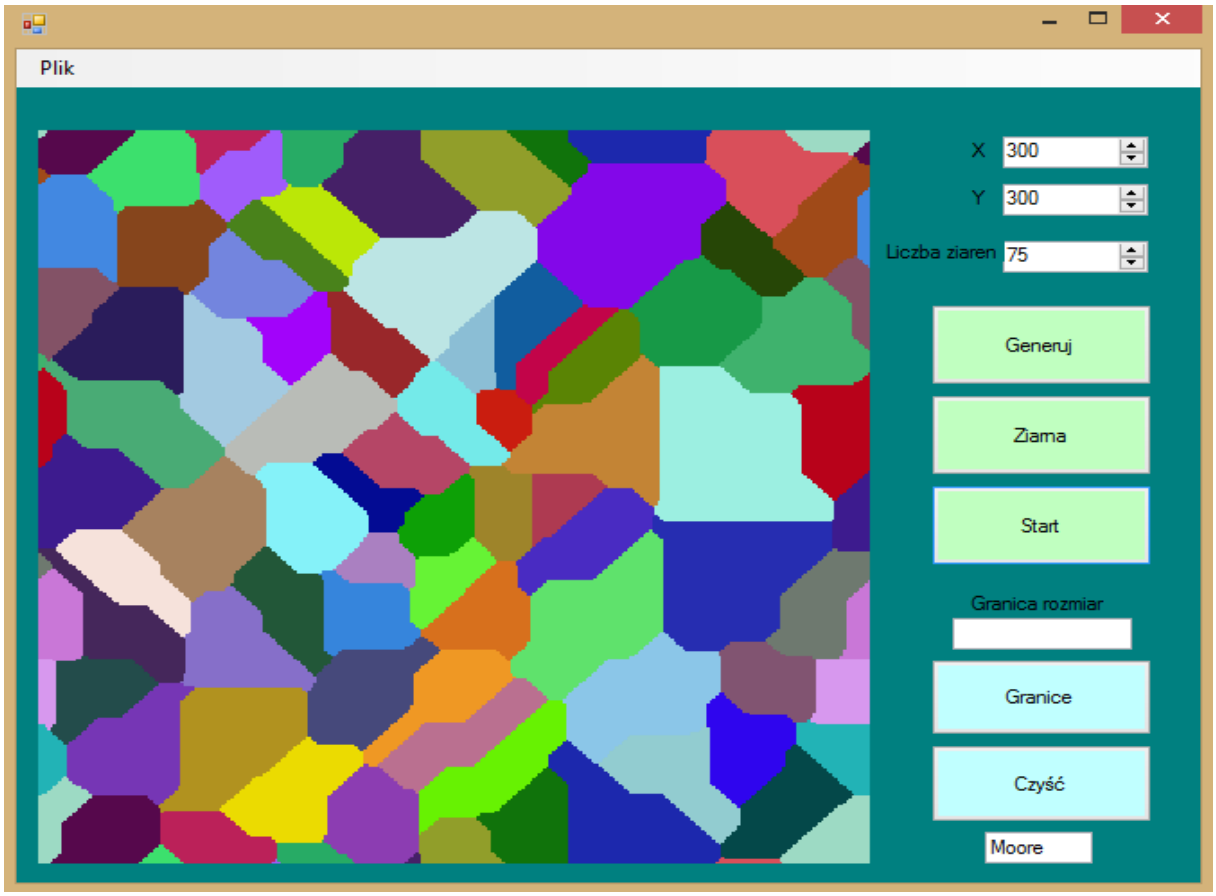
The structure of main window is splitted for two parts. One is responsible for output(grain growth) display and the second one consists of input fields. All of these fields are required to generate new blank area and launch grain growth simulation to create new microstructure.

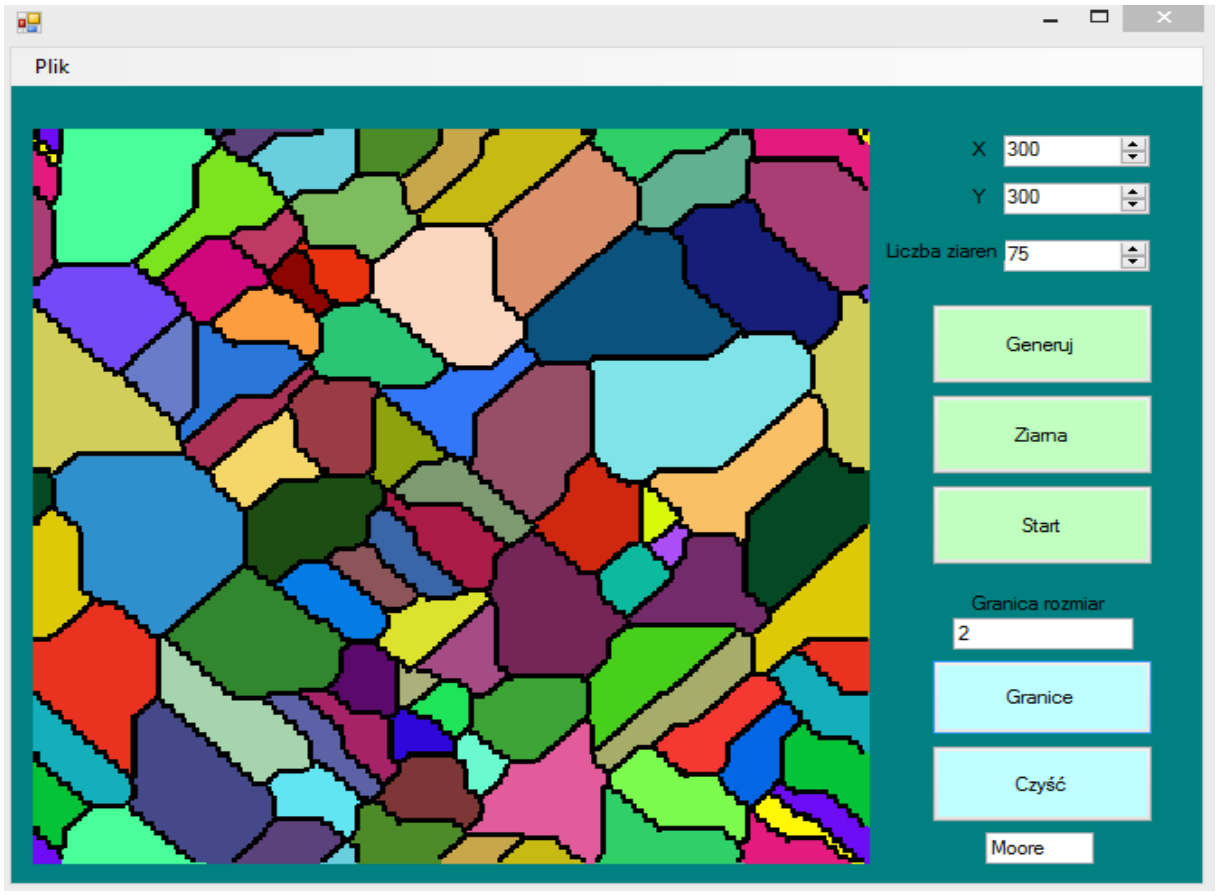
Application contains import/export features as well which are splitted for bitmap and text file import/export.

2. Output results

Below some example executions of program:




Plik
X
300
Y
300
Liczba ziaren
75
Generuj
Ziarna
Start
Granica rozmiar
Granice
Czyść
Moore


Plik
X
300
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Liczba ziaren
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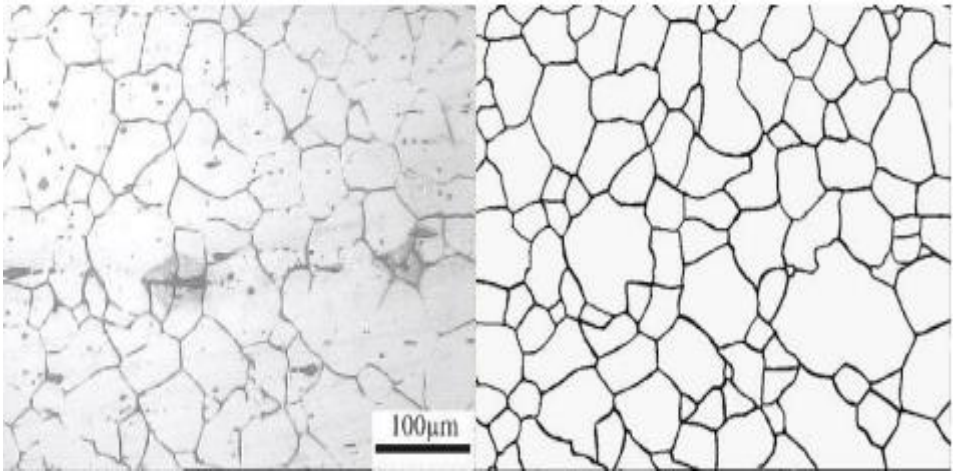
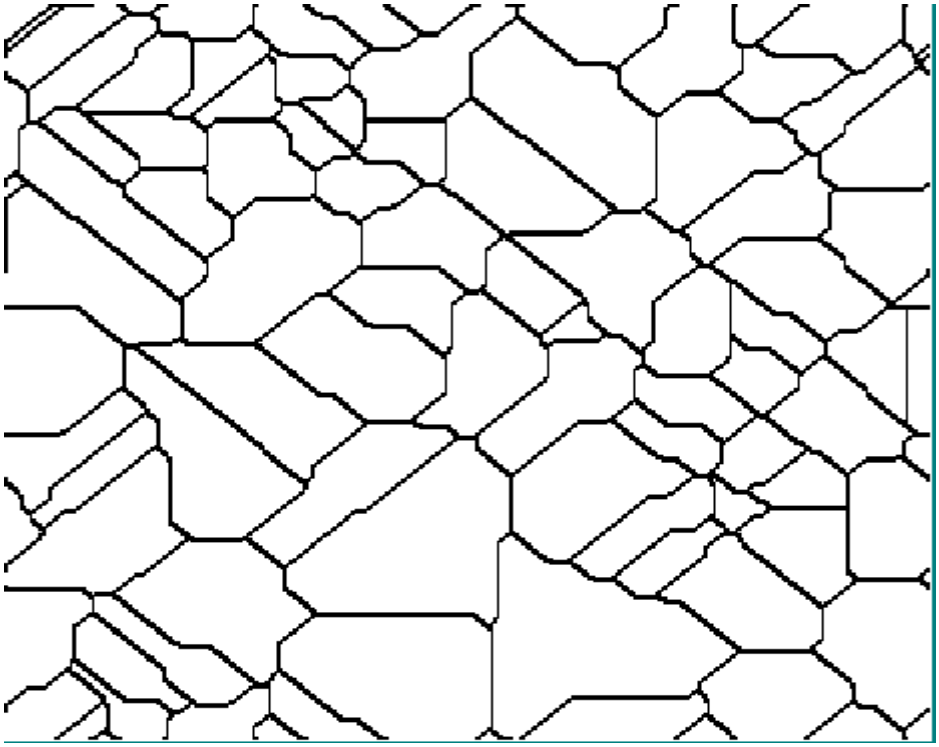
Generuj
Ziarna
Start
Granica rozmiar
2
Granice
Czyść
Moore

3. Comparison with real microstructures

Real microstructure



Microstructure from app



4. Summary

Implemented program displays grains growth microstructure with Moore neighbourhood. Application can displays different microstructures related with grains number. After final microstructure generation, program can export these results to bitmap or txt file. This simple system also allow to generate boundries on the grains growth map and clear interiors of the grains. Unfortunately application doesn’t contain some functionalities from requirement list like a inclusions feature.