

Recognising Geometric Patterns - Example 2

The problem

Figure 1 shows an image containing two overlapping hexagonal tessellations. The task of the program is to distinguish two tessellations and to identify the parts of each tessellation.

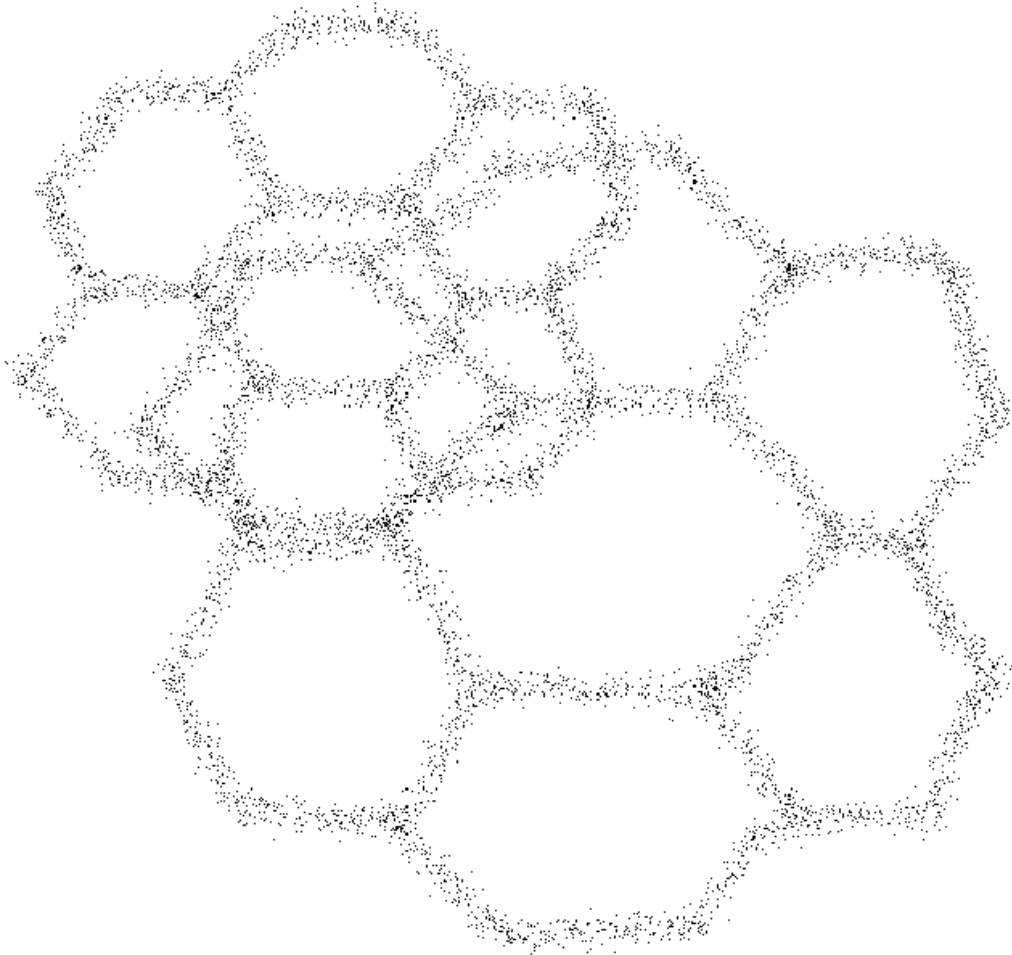


Figure 1: the original image.

The following two pages show the results of the program.

The results of the program

The program successfully finds the two tessellations. Figure 2 shows the result of the program, with one of the tessellations highlighted.

The red and blue rectangles show the lines identified by the program. The orange rectangles show the positions of the hexagons. The mauve rectangles show the bounding boxes of the two tessellations. The green squares show 'dummies', marking the boundaries of the tessellations.

(Note that the program is using a slightly different grammar than in example 1. A tessellation is considered as composed of hexagons, lines and dummies. In example 1, a tessellation was considered as composed of lines and dummies.)

The blue arrows mark the lines, hexagons and dummies that are parts of one tessellation. The blue discs indicate the connections between the parts (as specified by the grammar).

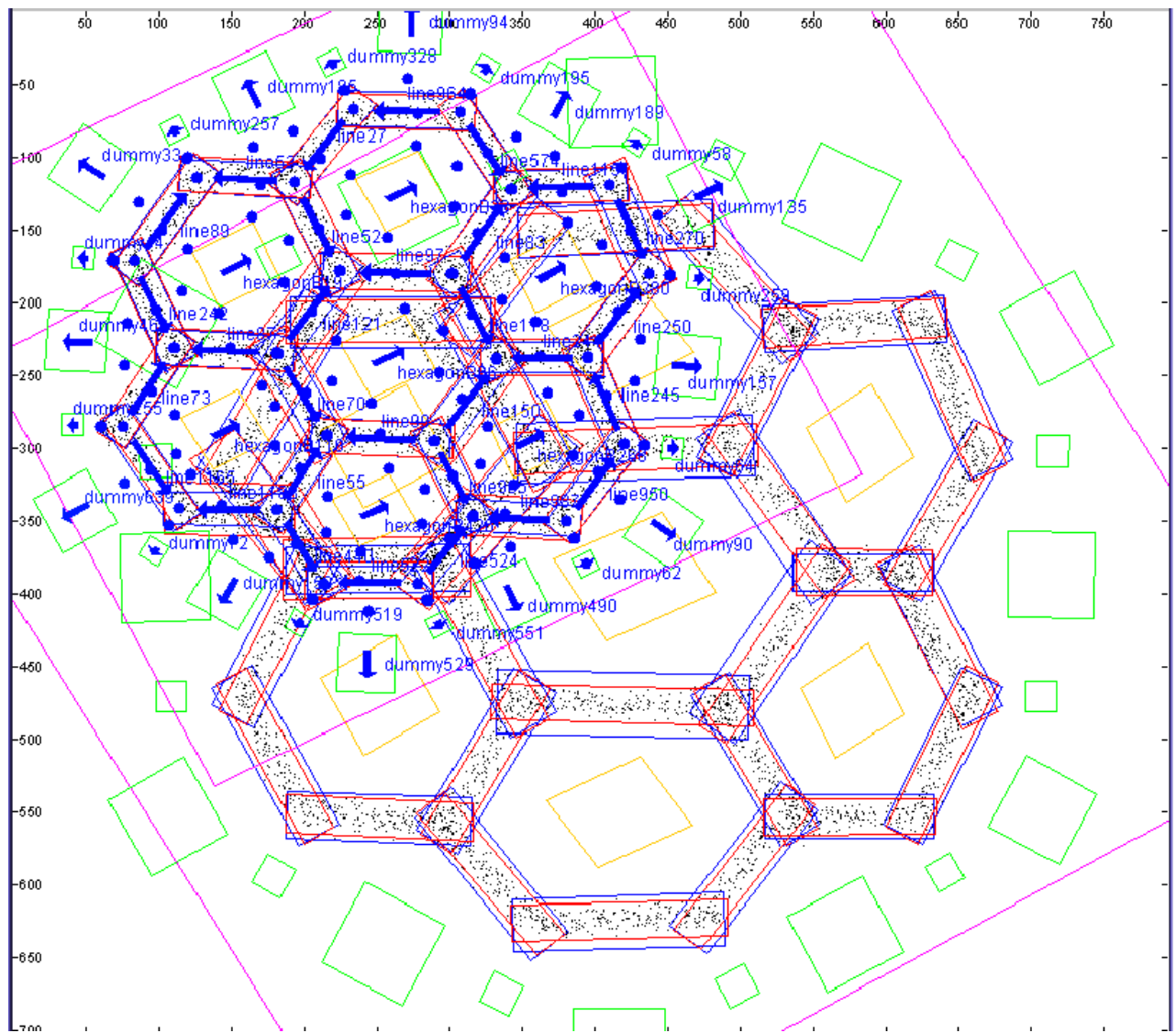


Figure 2: one of the hexagonal tessellations found by the program.

Figure 3 shows the result of the same run of the program, but with the other tessellation highlighted. The figure is identical to figure 2 except that the blue arrows mark the parts of the other tessellation, and the blue discs indicate the connections between the parts.

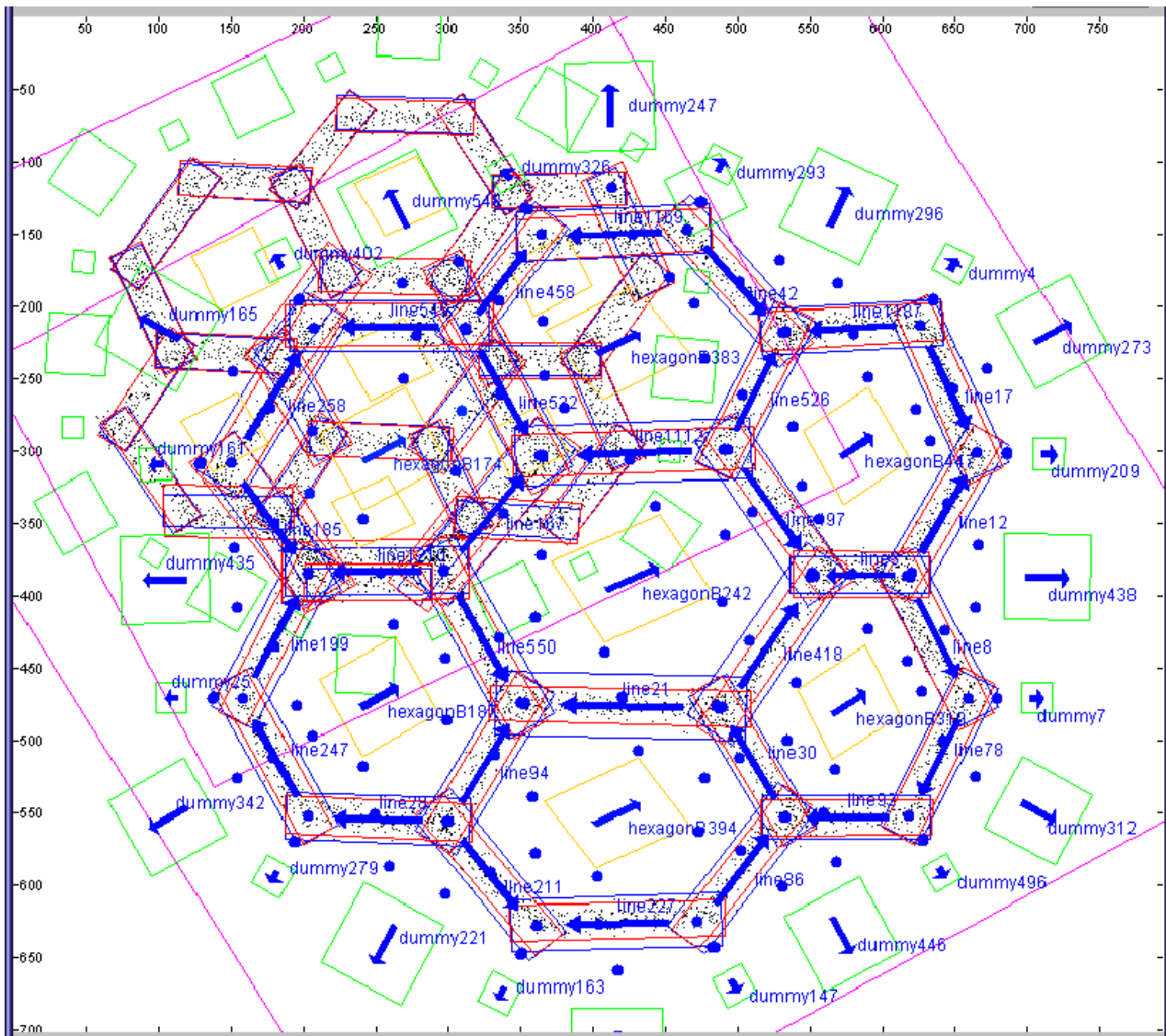


Figure 3: the other hexagonal tessellation found by the program.

Peter Fletcher, 23rd March 2006.