

Recognising Geometric Patterns - Example 6

Peter Fletcher, 25th July 2007.

The problem

Figure 1 shows an image containing a hexagonal tessellation overlapping with a chain and a square. The task of the program is to recognise these patterns.

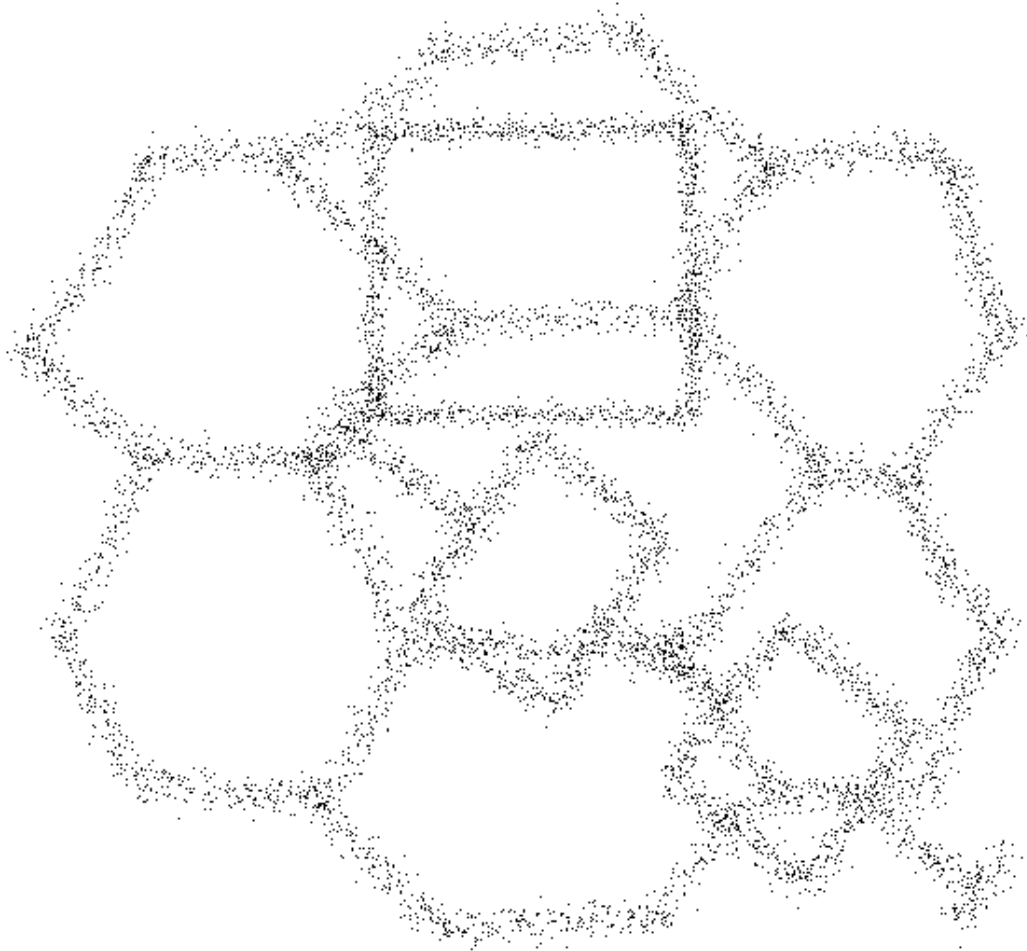


Figure 1: the original image.

The following pages show the results of the program.

The results of the program

The program successfully finds all the patterns present. Figure 2 shows the result of the program, with the tessellation highlighted.

The red and blue rectangles show the lines identified by the program. The pale blue rectangles show the positions of the hexagons. The big pink rectangle shows the bounding box of the tessellation. The green squares show 'dummies', marking the boundary of the tessellation.

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

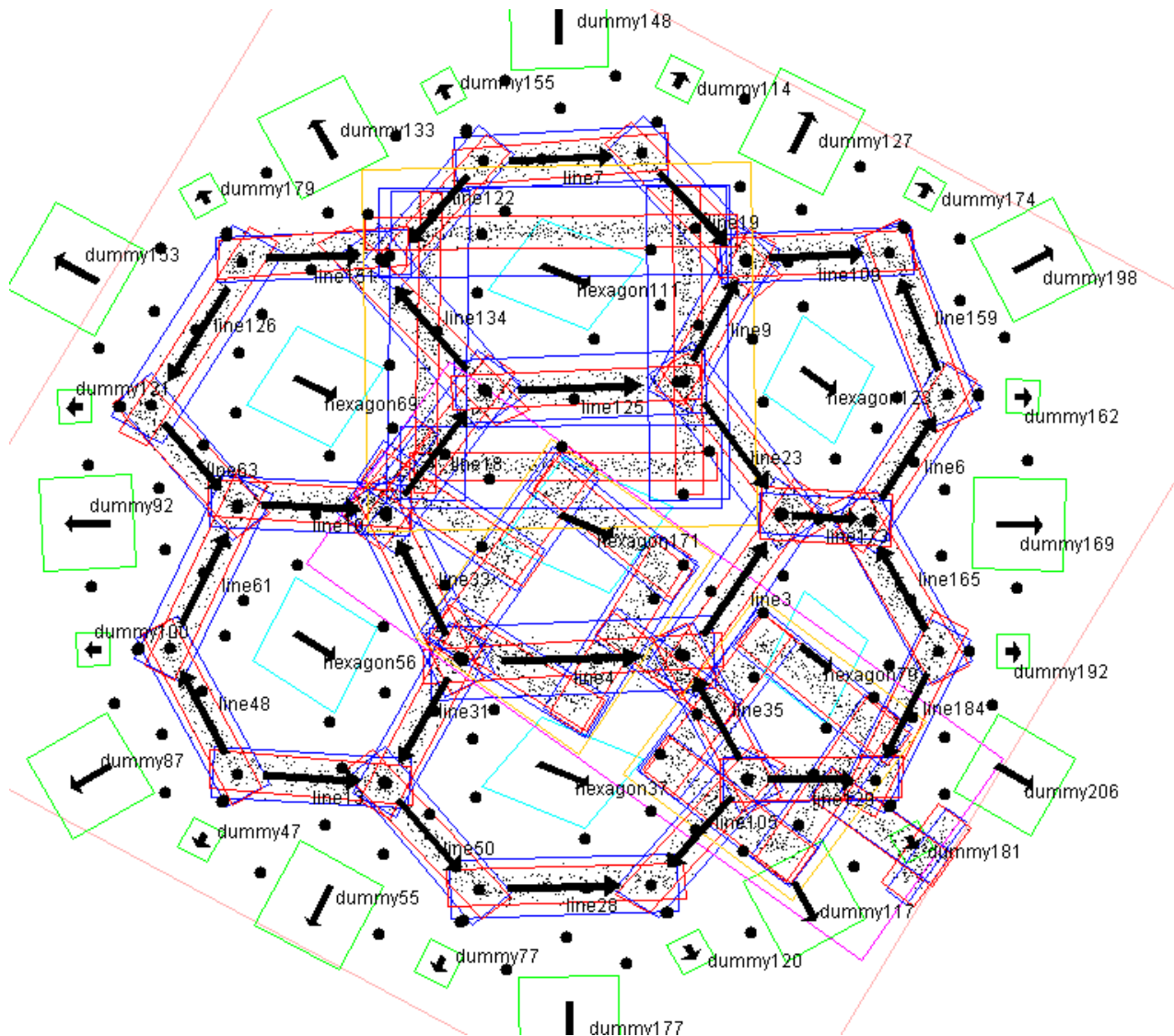


Figure 2: the hexagonal tessellation found by the program.

Figure 3 shows the result of the same run of the program, but with the chain highlighted. The red and blue rectangles show the lines identified by the program. The orange rectangles show the squares (two of which are parts of the chain and the third of which is not). The mauve rectangle marks the bounding box of the chain. The black arrows mark the lines and squares that are parts of the chain. The black discs indicate the connections between the parts (as specified by the grammar).

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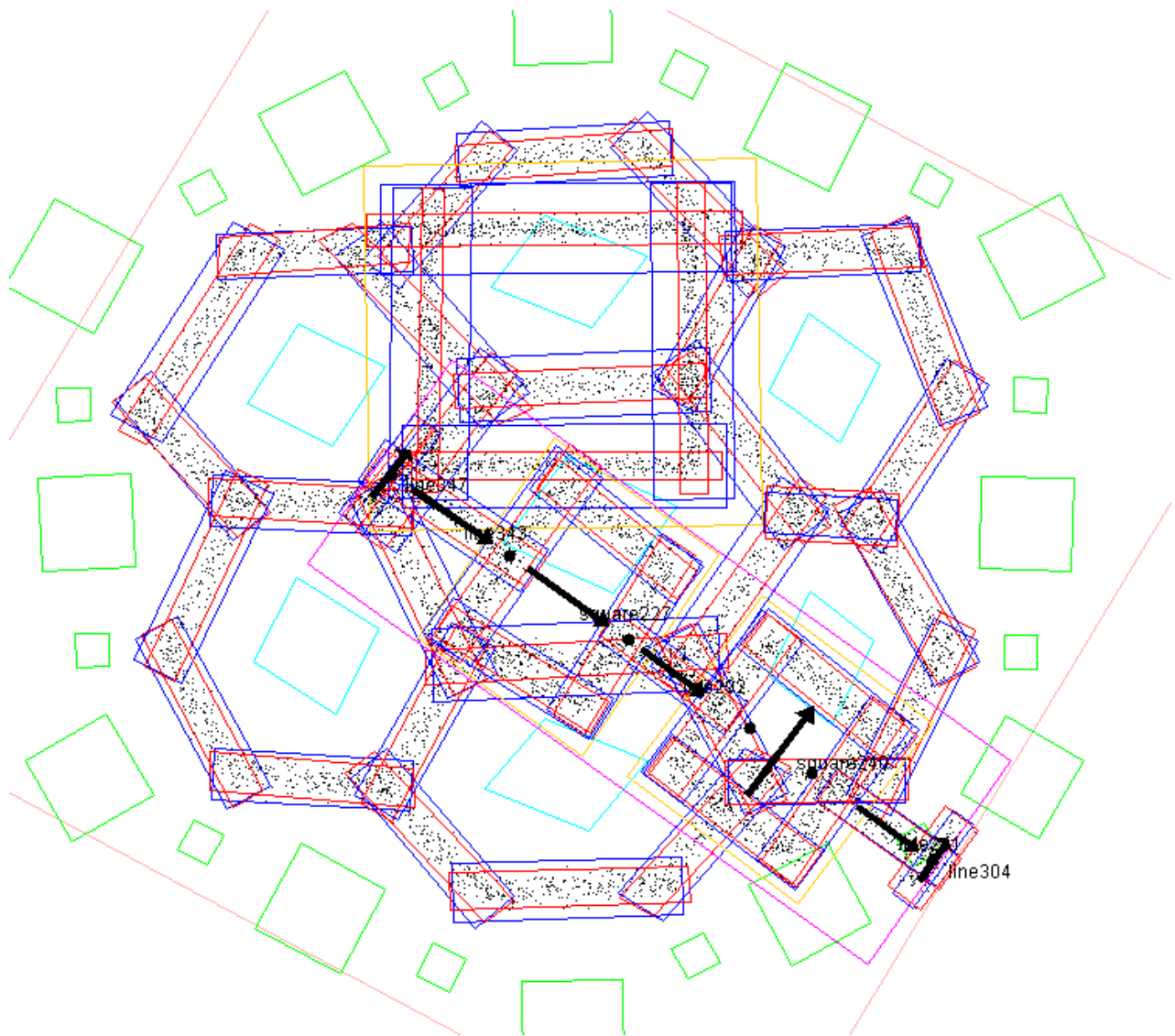


Figure 3: the chain found by the program.

Figure 4 shows the result of the same run of the program, but with the square highlighted. The red and blue rectangles show the lines identified by the program. The orange rectangle shows the square.

The black arrows mark the lines that are parts of the square. The black discs indicate the connections between the parts (as specified by the grammar).

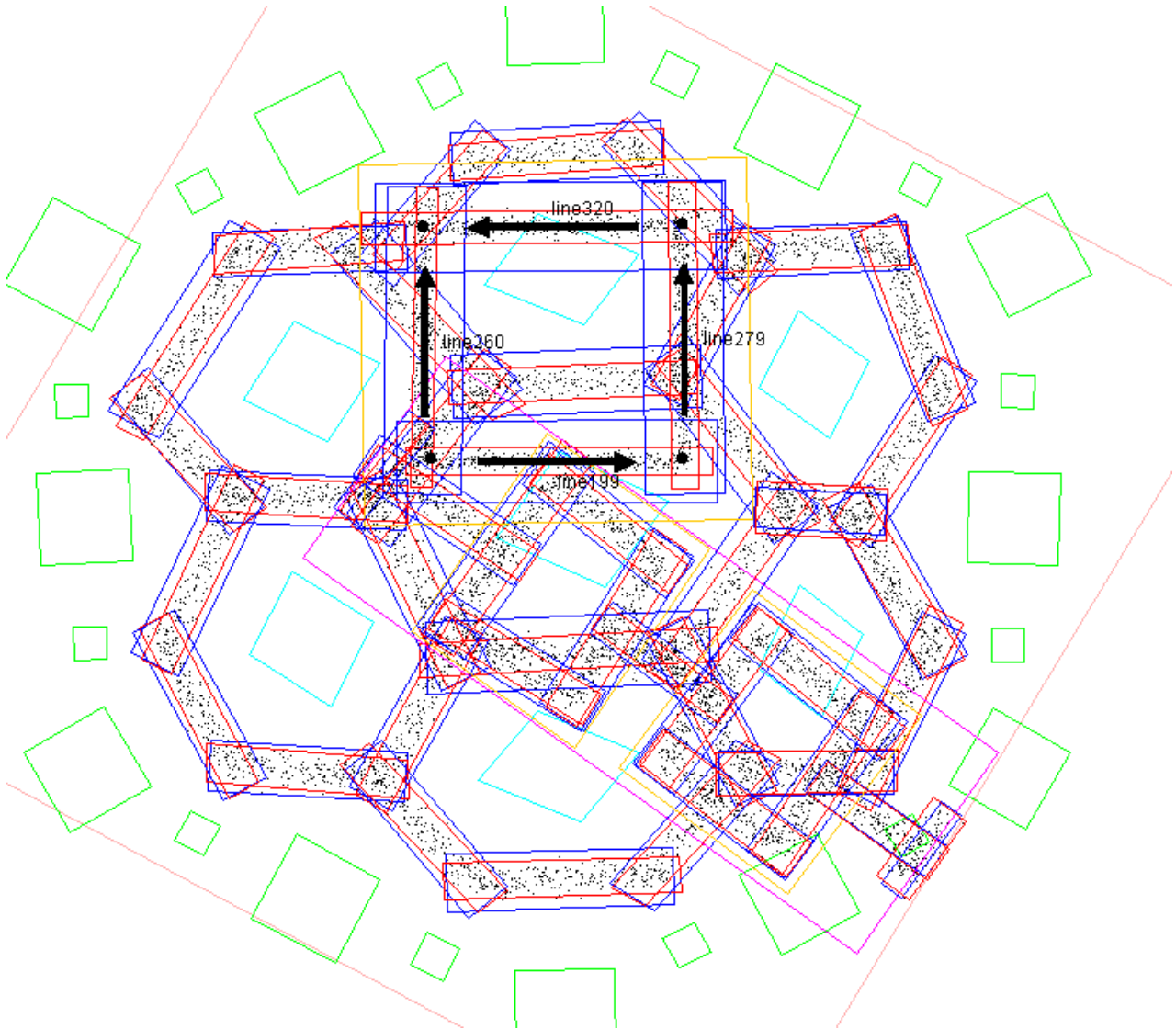


Figure 4: the square found by the program.