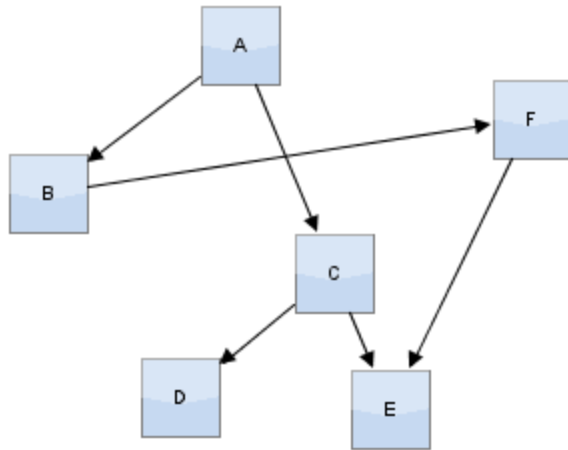


Optical graph recognition

Rūdolfs Opmanis

Problem statement

Before



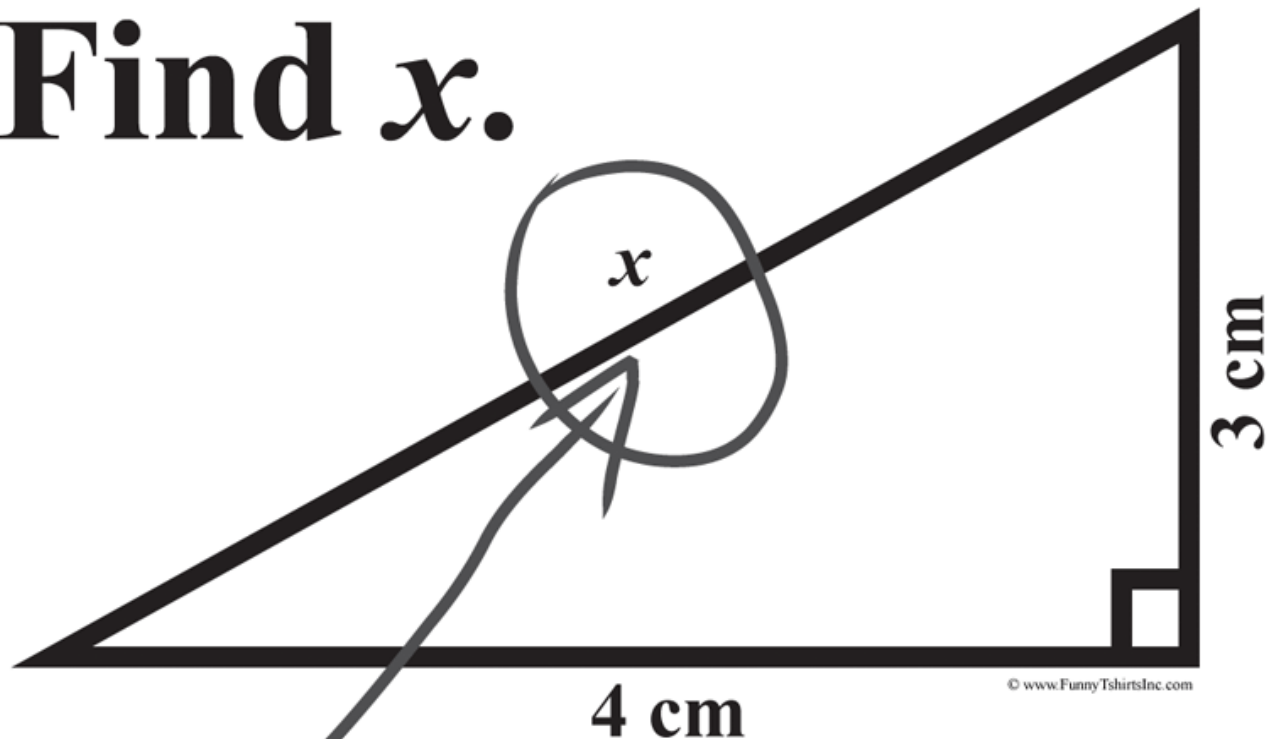
After

- ▶ List of nodes
A,B,C,D,E,F
- ▶ List of edges
A->B,A->C,C->D,C->E,B->F,F->E
- ▶ Node positions and sizes
- Other visual and non-visual graph elements

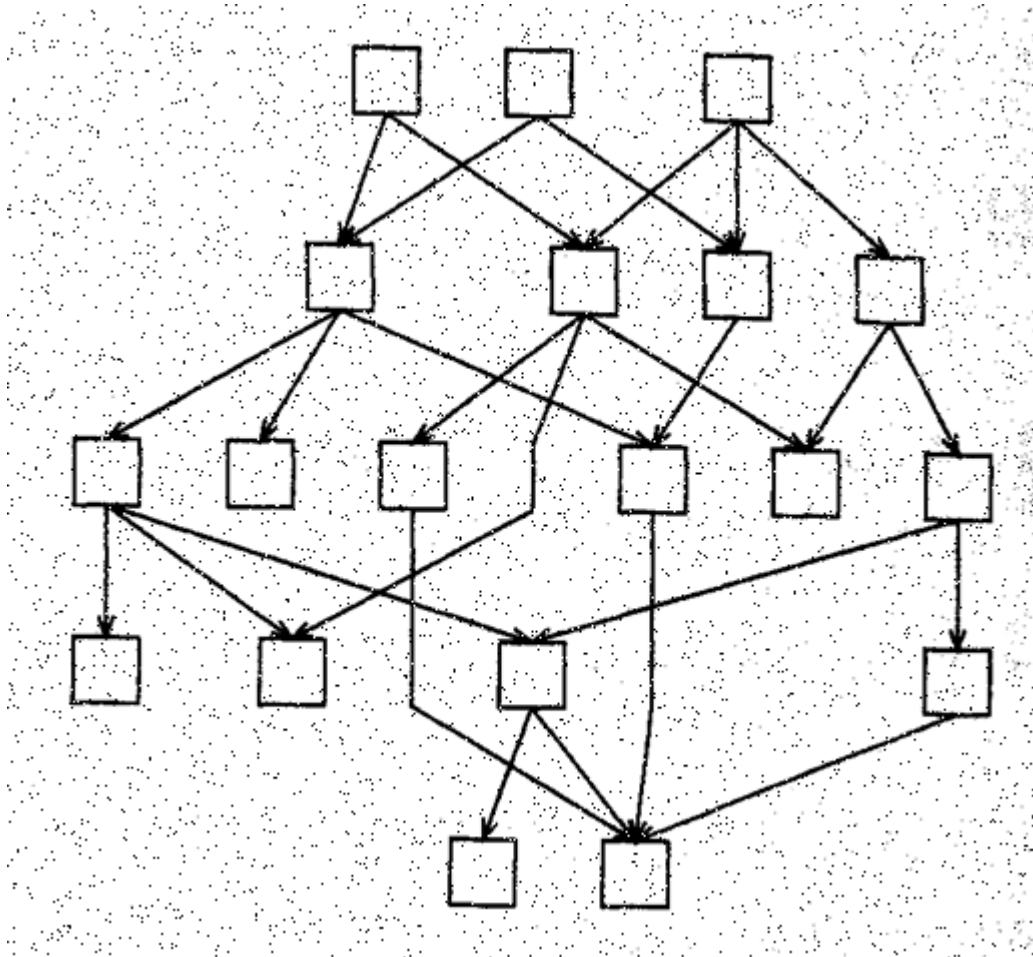
Where it can be used?

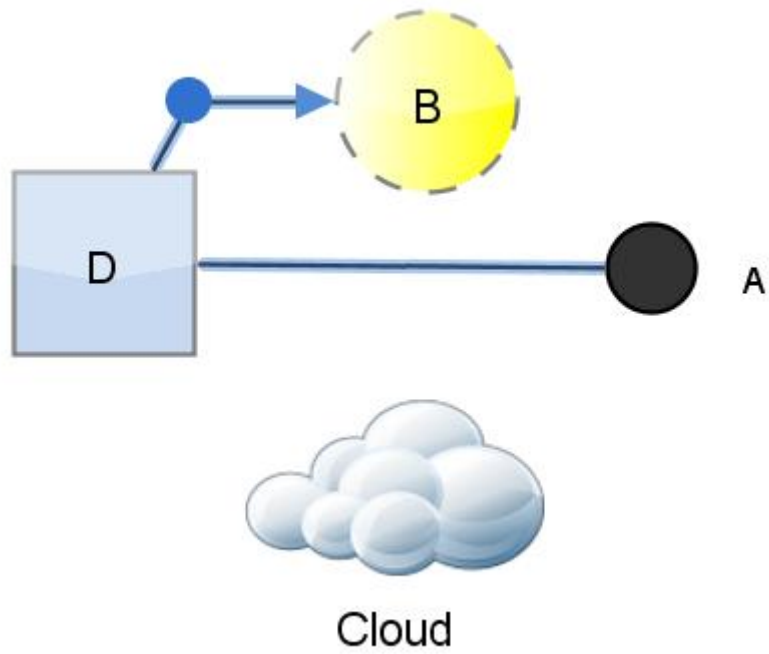
- ▶ Reuse old schematics
- ▶ Use drawings for data import/export between various systems
- ▶ Special kind of transform between raster and vector graphics
- ▶ Understanding typical problems with graph recognition we can improve graph layout and graph drawing

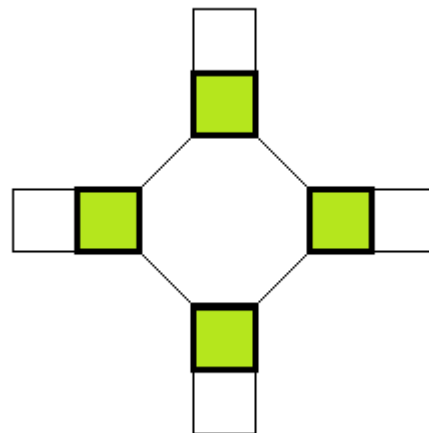
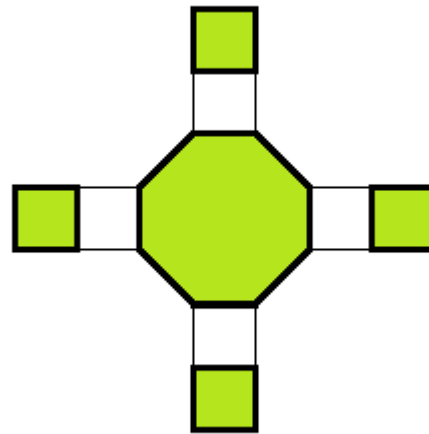
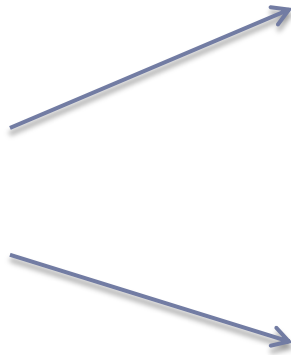
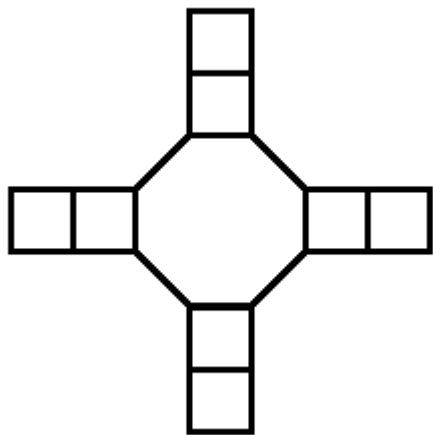
Find x .



Here it is







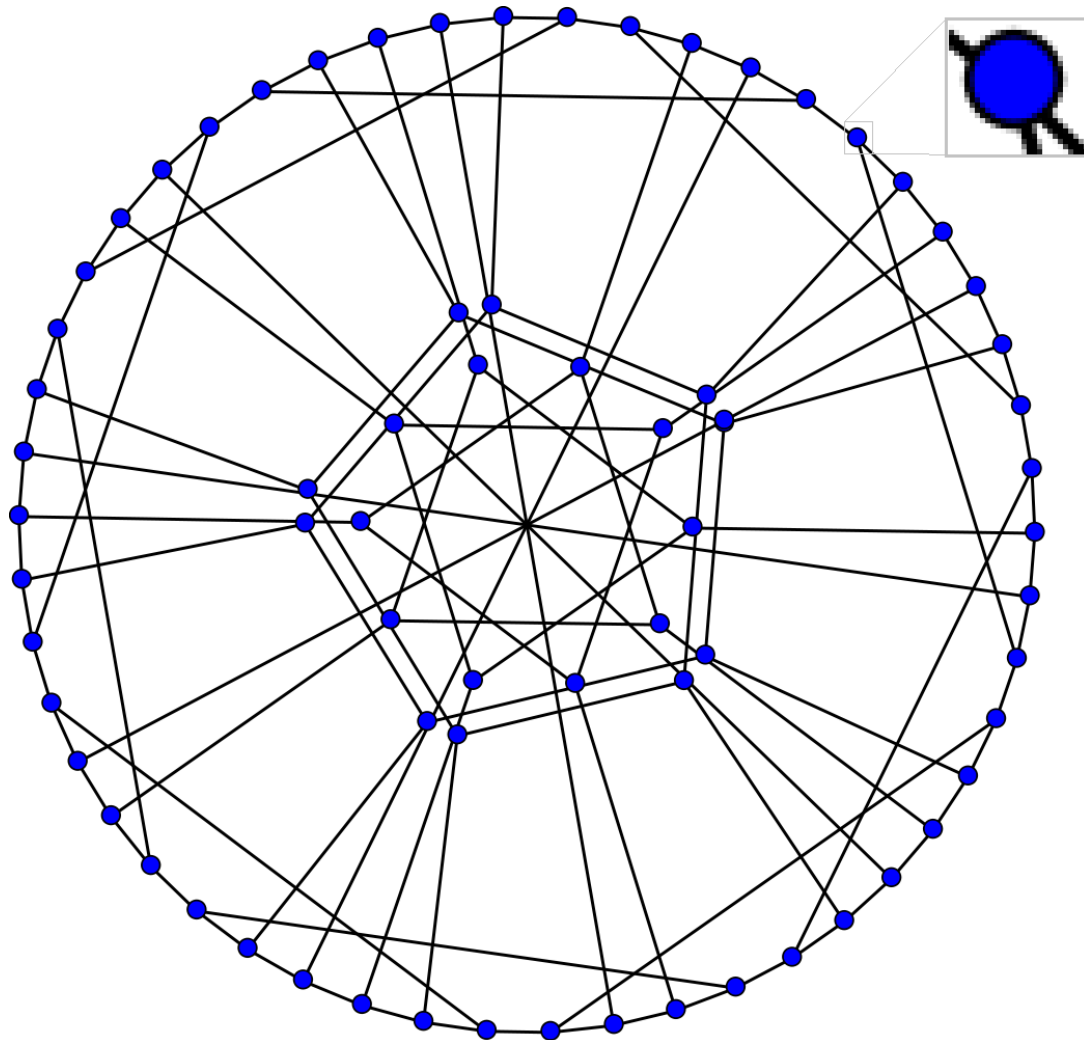
Evolution of graph recognizers

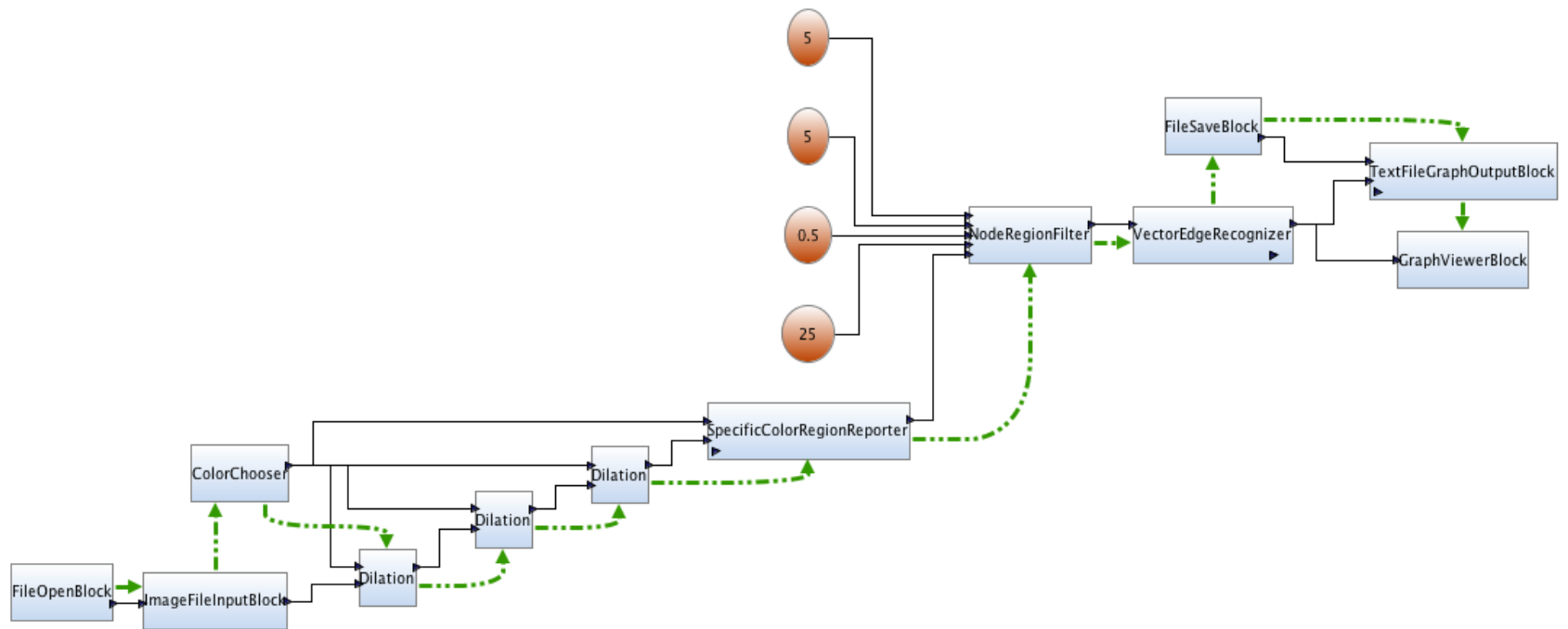
- ▶ Separate recognizer for each major visualization class
- ▶ Library of recognition algorithms
- ▶ Tool for interactive algorithm creation (Building block approaches)

Building block approach

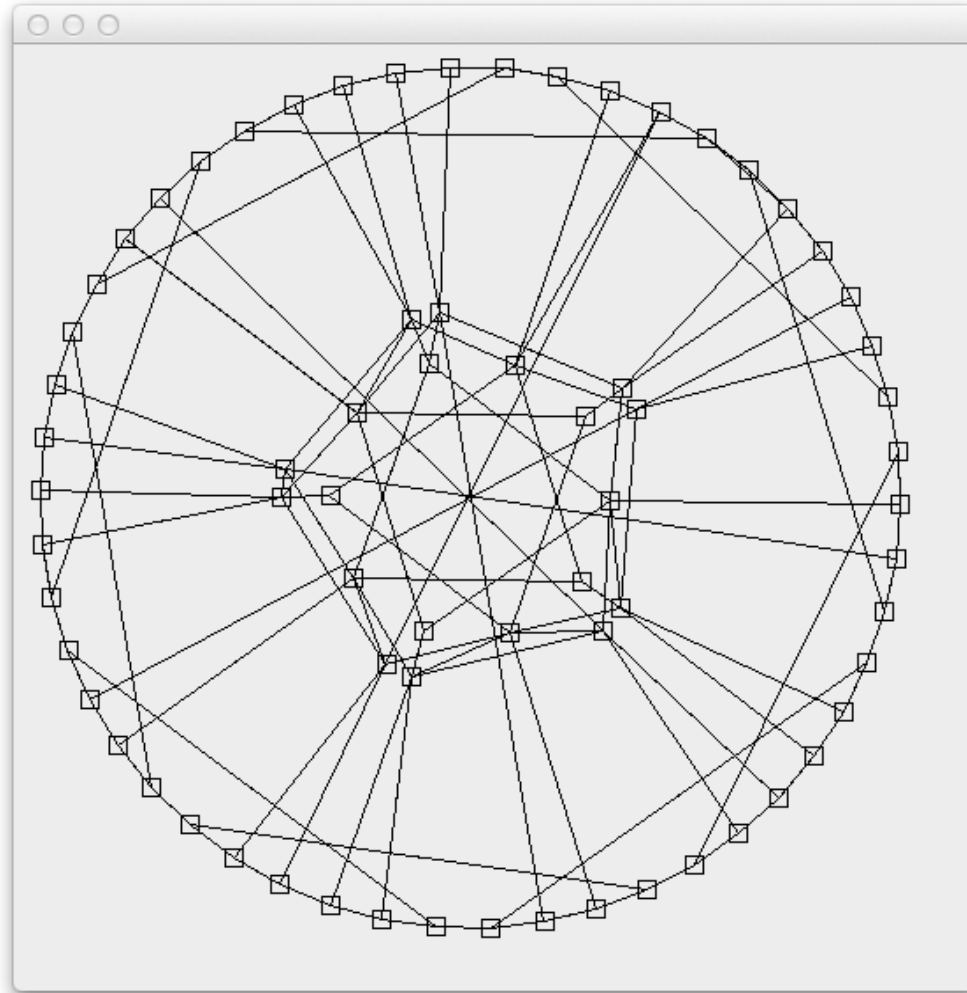
- ▶ Building blocks
- ▶ Common memory for all blocks
- ▶ Links between blocks that specifies execution order and connections between block inputs and outputs

Input image





Result



Future work

- ▶ Still need to work on recognizing other visual and non-visual graph elements
- ▶ Should move towards computer vision system which suggests solutions rather than asks for every detail from the user
- ▶ Extend previously used Building Blocks visual programming language to make it user friendly

Thank you!