Xcos Automatic Layout

Functionality

Name: Chenfeng Zhu

Mentor: Mr. David Clément

Mentor: Mr. Paul Bignier

1 Functionality description

There are several functionality about automatic layout needed to implement compared to other graph modeling software. However, I only focus some functionality below due to the time limits and the JGraphX.

1.1 Offline Functionality

This part is about optimizing the layout after drawing.

1.1.1 Smart Routing

One-click to choose an optimal path for the link. Choose the link and click the button to find an optimal path for the link and change the link style.

1.1.2 Automatic Layout

One-click to beautify the model diagrams. Auto-rearrange the blocks and lines. Start with the blocks which have no in ports, and arrange the blocks and links one-by-one and step-by-step.

1.2 Online Functionality

This part is about optimizing layout dynamically and simultaneously while drawing. Implement kind of an incremental algorithm which can be stopped after 50ms to 60ms of work and returning a valid (but not perfect) choice for users.

1.2.1 Preview for Drawing Links

Further function for Smart Routing. When choosing a curve (broken line) to draw a link, users can see how the line would be while drawing.

1.2.2 Preview for Moving Blocks

The lines will change simultaneously for preview when moving the blocks.