

Lab6 Report

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This lab report of force-directed graph layout consists of two parts. The first part is about the discussion on the adjustment of parameters in the program. The second part is the contrast between the program's representation and the one in Bandyopadhyay et al.'s results.

Force Parameters Discussion

There are several parameters that can be set for force layout, position linked nodes using physical simulation. The following sections describe and discuss some of the parameters.

Charge vs. Gravity

Gravity means the strength to pull things to the center.

As for charge, in terms of the constant value, negative charge means impulsion and positive means attraction. If the strength is zero, and gravity is 0.1, all the nodes get together. So negative values should be used for graph layout, and the smaller the value is, the more it will spread out.



Figure 1 Charge 20

Size vs. (Gravity & Charge & linkDistance & chargeDistance)

For certain number of nodes, the charge/gravity value/linkDistance/chargeDistance should correspond to the size of the layout so that the nodes will not overlap or get outside of the boundary.

Theta&Alpha vs. Time

Theta: Get or set the accuracy of the charge interaction.

Alpha: Get or set the layout's cooling parameter.

The more accurate/long-time interaction will cost more time for the graph to get relatively stable.

Contrast

Bandyopadhyay et al.'s results	Force-directed Graph
<ul style="list-style-type: none">- The nodes and links are clustered together and it's hard to find a particular node.- Interaction is limited.+ More information is represented, like the weight of each link, which shows the frequency of its appearance.	<ul style="list-style-type: none">+ The nodes are well spread out on the screen.+ Flexible and rich interaction. If one node is dragged, other nodes will be influenced so that a new view will be established.+ If the information is given, the force-directed graph can also show corresponding link weights and colors.