The ViViz Bugs and Features List

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Nov 14: ViViz v.0.1 - pre-integration, only with substrate and layered layout and tree layout

Current features:
1. Ability to show nodes with screenshots of GUI
2. 3 layouts. Not integrated yet into one main program -
   • Substrate: position of nodes based on GUI file data,
   • Layered: based on the level of the widgets, representing a tree structure.
   • tree layout: collapsible tree structure - not yet able to read in GUITAR inputs yet

Bugs discovered:
1. There seems to be a problem when the program starts - need to move to load the images
2. When clicking the nodes, not always highlighted - need to left click, then right click then it will be highlighted!
3. When a widget with the image hits the edge of the screen, the image disappears immediately, may need to take into account the size of the image to prevent this from happening.

ViViz MAIN GUI Interaction/Features needed for first prototype
1. Standard functions - zooming, panning, and highlighting. Adjusting and manipulating position of nodes
2. Details on demand - mouse over or highlight reveals details
3. Selection of visualization states - GUI Structure, EFG, GUI+EFG (Layered layout) via checkboxes
4. Loading of GUI, EFG and TEST files.
5. Turn on and off Image overlays in the nodes; adjust the alpha (transparency) of the nodes
6. Adjusting the various parameters needed for Tree and Graph display -> put them under advance controls since they will not be used often
7. Filtering functions specific to GUI+EFG visualization - show GUI edges, show EFG edges, show all edges
8. Filtering functions specific when TEST files are loaded; and affects all 3 visualization states - show PASSED edges, show FAILED edges, show PENDING edges - use checkboxes so that any combination of selection is possible.
9. Filtering by time - using the time of test information in the TEST file.
10. Control panels can be hidden - toolbox menu that allows user to hide control panels related to the 3 states. Control panels
11. Details on demand/show xml file portion, show summary of XML information.
Nov 23: ViViz v.1.0 - First Prototype

Bugs:
1. When highlighting a node, the edges are not highlighted.
2. Why are some edges thicker? What does thickness encode?
3. Why are some edges in light blue and some in light green? Some edges are blue and black. Which corresponds to the 3 states? EFG, GUI or both?
4. "Node Income degree" and "Node Outcome degree" should be rename to "Node in-degree" and "Node out-degree"
5. "Screenshot transparency" -> "Screenshot transparency"
6. When transparency becomes '0', the nodes are all suddenly opaque.. should be completely invisible or '0' should not be allowed
7. Nodes do not remain selected after clicking on it.
8. Missing edges and mis-colored edges when performing filtering functions on the in-degree and out-degree. Need to check and uncheck the "Graph Type" checkboxes to reset.. need to fix this
9. Need to check the correctness of the filtering by in-degree and out-degree... i seem to get weird results - when I limit to high in-degrees, low in degrees edges remain...Maybe we could check in advance the max-min degrees and limit the user to these values...so as to prevent an empty panel from showing.
10. Switching between show screenshot and not showing screenshots - the arrows linking the nodes when it resizes are not updated - needs to be refreshed manually. Without refreshing, the arrows may be pointing to nothing as the screenshots may be large. The arrows do not point back to the nodes until the user mouse over it.. need to fix this
11. When turning on screenshots, still need to move the panel or do something to refresh the panel - should refresh automatically.
12. Inconsistency in the "end" and "start" of the arrows when screenshots are used. The starting points of the arrows (edges) come from the center of the screen shot while the ending points end at the edge. Both should come from the edges as it becomes obvious when you reduce the alpha in the screenshots.
13. A "bug" that I've noticed is that the force directed layout seemed to be very unstable, it simply jumps around and about. Wondering if we can have a control panel (or a hidden "advanced" control) for us to tweak the force directed layout parameters if necessary.
14. Once I enter force-directed mode, I seem to be unable to return to other modes of display
15. The xml "raw data" panel has a problem on my computer - the left panel seemed to be "cut away".
16. After moving the nodes, and switching to another layout, and going back again, the nodes reset to the default layout at the default zoom.. should save the current state such that the user need not re-layout again and re-zoom.
17. Sometimes I am able to drag the nodes even though it is not highlighted (become opaque). This should not be the case. When you drag the nodes, the nodes, together
with its edges should be highlighted. Happens only when I try to re-click and re-drag the same node the 2nd time.

18. **Highly desired feature 1:** in all the slider controls - a feedback to the user stating the current value of the slider. Ben S mentioned that as important.

19. **Highly desired feature 2:** allows the user to slide the 2 headed slider by sliding the entire range: for e.g. you had a range of 10 - 30, and u can drag the entire bar to reveal edges of 20 - 40 and so on..

**New features suggested:**

1. Enable transparency for edges as well. makes edge crossings easier to see (NodeXL edge transparency was very useful for cluttered graph)
2. An "overview panel" as navigating the large tree in zoomed in mode without knowing exactly where you are in the entire GUI structure can be confusing.
3. Choice of various zoom levels accessible via a scroll bar in the control panel
4. When highlighting data in the XML details on demands, the corresponding nodes should also be highlighted
5. When highlighting a node that is partially missing (too big and is off screen) - recenter.
6. Double-clicking on a node zooms in by a fix amount - should zoom in to reveal the entire node at its true resolution
7. When the user change the size of the panel or resize the GUI, the visualization should resize so that it is always visible
8. Ability to drag a rectangle of interest and do a rapid zoom in
9. Ability to change color. We can use "themes" as suggested by the previous class on Color Brewer. User selects a theme so that the appropriate color is applied to the various features in ViViz. We should have a dynamic help menu that explains what each color means. There should be an option to change the background color of the panel - some people like a darker background for better contrast.
10. Space out the nodes so that it does not occlude each other so much. Use the dimensions of the nodes to compute an ideal spacing at each level
11. Ability to capture and save the state of the visualization so that the nodes are placed at the customized position by the users.
12. Since we have a directed graph - will it be useful to compute some simple graph metrics - and use them to change the color of the nodes or for filtering (may be complicated should put into future work)
13. Details on demand that "pop ups" near the mouse pointer will be useful - but not necessary
14. The details on demand could possibly be extended to highlight specific lines in the raw data? (it is probably not necessary- but Atif will be impressed).
15. Should we consider some "short-cut" menu when user does a right click?