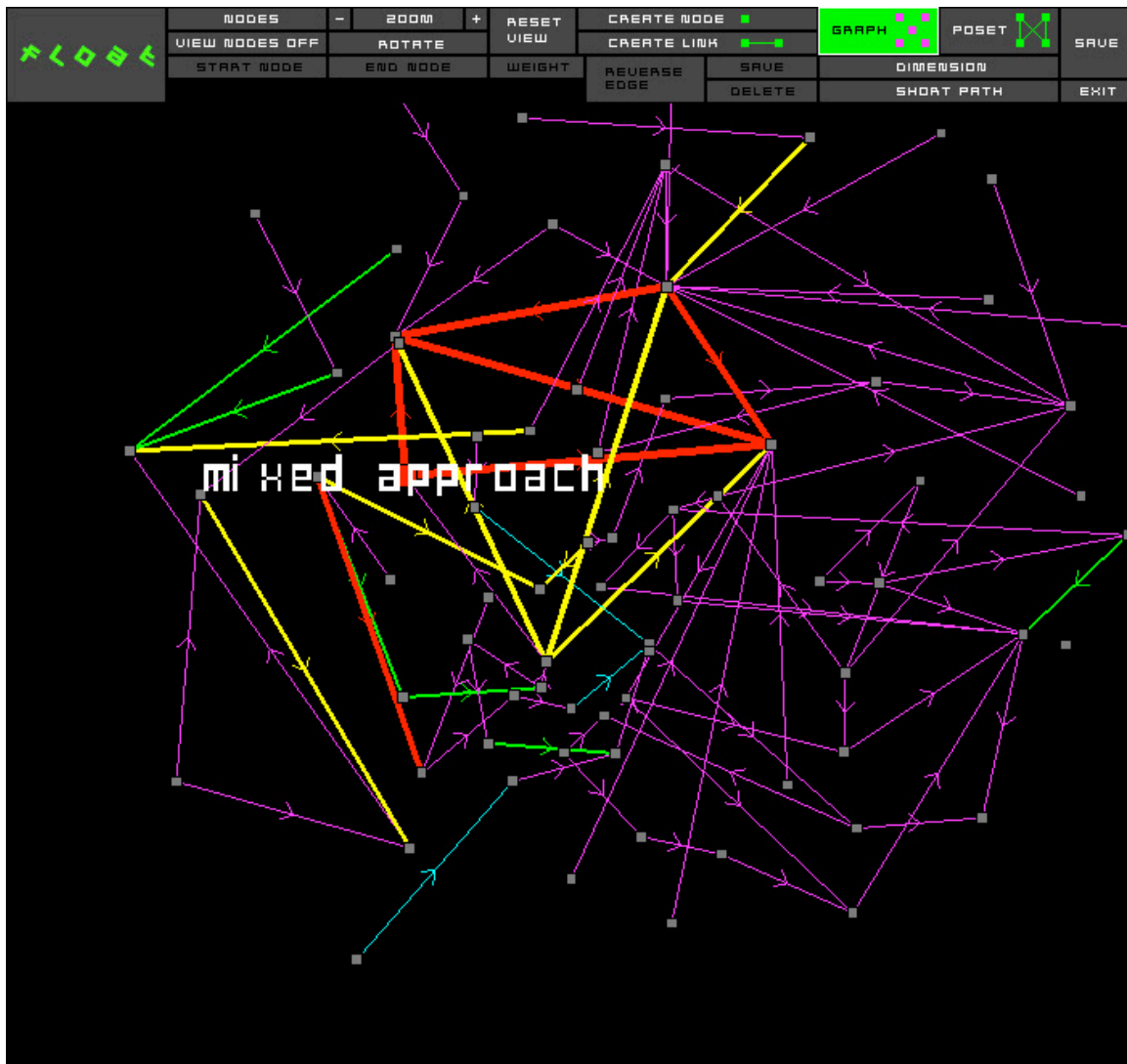


FLOAT

Fundamental Research Lab

Current interface top :



current functionality :

1. **nodes** : displays the nodes in special colors (no titles), must depend on weights / number of links, as some are different size / color.
2. **titles** : displays the titles of each node at the node in particular.
3. **links** : displays only the links, no nodes / titles at all.
4. **Select** : means that the user can click and drag a node at will.

5. **Zoom** : the user may drag a box, and that becomes the new display area (normalized to the aspect ratio of course).
6. **Center** : the user may click a node, and this node will be moved to the center of the display area.
7. **Rotate** : the user clicks a non-node area, and by dragging may rotate the whole graph according to his/her new mouse position.
8. **Move** : activates a pseudo-bouncy effect on the nodes when the user drags a node.
9. **Stop** : removes the bouncy effect.
10. **Add Node** : when activated, the user creates a new node each time he/she clicks the display area, and the new node is created at that point.
11. **Add Link** : the user may click a node, and by dragging the mouse will create a new edge. If the user releases the mouse in a non-node area, then the link is not created, else if the user releases the mouse over another node, then a node is created.

Nodes :

when toggled (single click), this turns to **Titles**. Effect : changes the display to show either the nodes plus titles, or just the nodes (no titles). If the next button, **Show Nodes**, is turned to **off**, then this button becomes inactive, grayed out. So the user cannot use this button when the **Show Nodes** is off, which makes sense, as the nodes are no longer being displayed. When the **Show Nodes** button is turned back on, the **Nodes** button re-activates, and shows the state it should be in correctly (ie. It does not default back to Titles; it remembers).

Show Nodes :

As mentioned above, this has a particular effect on the **Nodes/Titles** toggle button. Its effect is to show / hide the nodes. When hidden, then the user only sees the edges of the graph. In this mode (OFF), then it makes no sense to allow operations on nodes, which are in particular:

move(node), center, edit, create nodes / edges, single-click move, double-click edit, node enlargement by mouse-over (obviously, since they are not visible).

So all these operations are **disabled** when the **Show Nodes** button is toggled to off, and **enabled** when the **Show Nodes** button is toggled to on.

Zoom :

There are three buttons here in fact, we present each one:

1. *Minus* : causes the camera to zoom out, up to a view limit, such that the whole graph is visible on the screen, but it does not get too small. This button zooms out by some amount (example 15% may work well), each time it is pressed.
2. *Zoom* : allows the user to drag a box on the screen, and when the user releases the mouse, the box becomes the new viewport. However this is bounded by some sensible value, such as a node must be in the new viewport : eg, if there are no nodes in the viewport, it makes no sense.
3. *Plus* : zoom in, the opposite of minus above. The bound here is that there must be a node in the viewport after the +15% magnification.

Rotate :

When active, the user may drag any area of the viewport (even on a node), and that will cause the entire graph to rotate around the center point of the screen. As a consequence, when this is active, then the following are **disabled** :

move(node), center, edit, create nodes / edges, single-click move, double-click edit, node enlargement by mouse-over.

The rotate button remains active until the user clicks it again, or presses Reset.

Reset :

After a number of zooms / rotates / translations, it is possible for the user to lose track of his/her current position within the graph. The reset button causes all translations / zooms / rotations to cancel, and the viewport returns to its default view, which ideally displays the entire current graph. It also returns the Show Nodes toggle to **on**, and the Nodes/Titles to **titles**.

Create Node :

Pressing this button causes the FLOAT application to wait for the user to specify the coordinates of a new node on the viewport. When the user clicks in the viewport, then these coordinates must not be within another node (if there is contention for space, the user can always zoom in before creating the node, so there is more relative space). Should the user wish to cancel his/her choice to create a node, then pressing the button again (which has now toggled to a 'cancel' option) will indeed cancel this action.

Creating a node is also an exclusive action regarding user input, and so the following options / abilities are **disabled** when **Create Node** is active :

move(node), move(graph), center, edit, create edges, single-click move, double-click edit, node enlargement by mouse-over. When the user either creates the node, or cancels the action, then the above actions are restored.

Create Edge :

Almost identical to the above button, however in this case the user is expected to select two nodes (that must be different) from the viewport. These nodes are selected by single clicks, rather than the current drag. This allows the user to do the following between each selection: translate, zoom (but not rotate). Since these actions do not require the user to click a node (which would conflict with the **Create Edge** action), this is a highly flexible operation.

The actions that are disabled are :

move(node), center, edit, create node, single-click move, double-click edit, node enlargement by mouse-over.

View DAG :

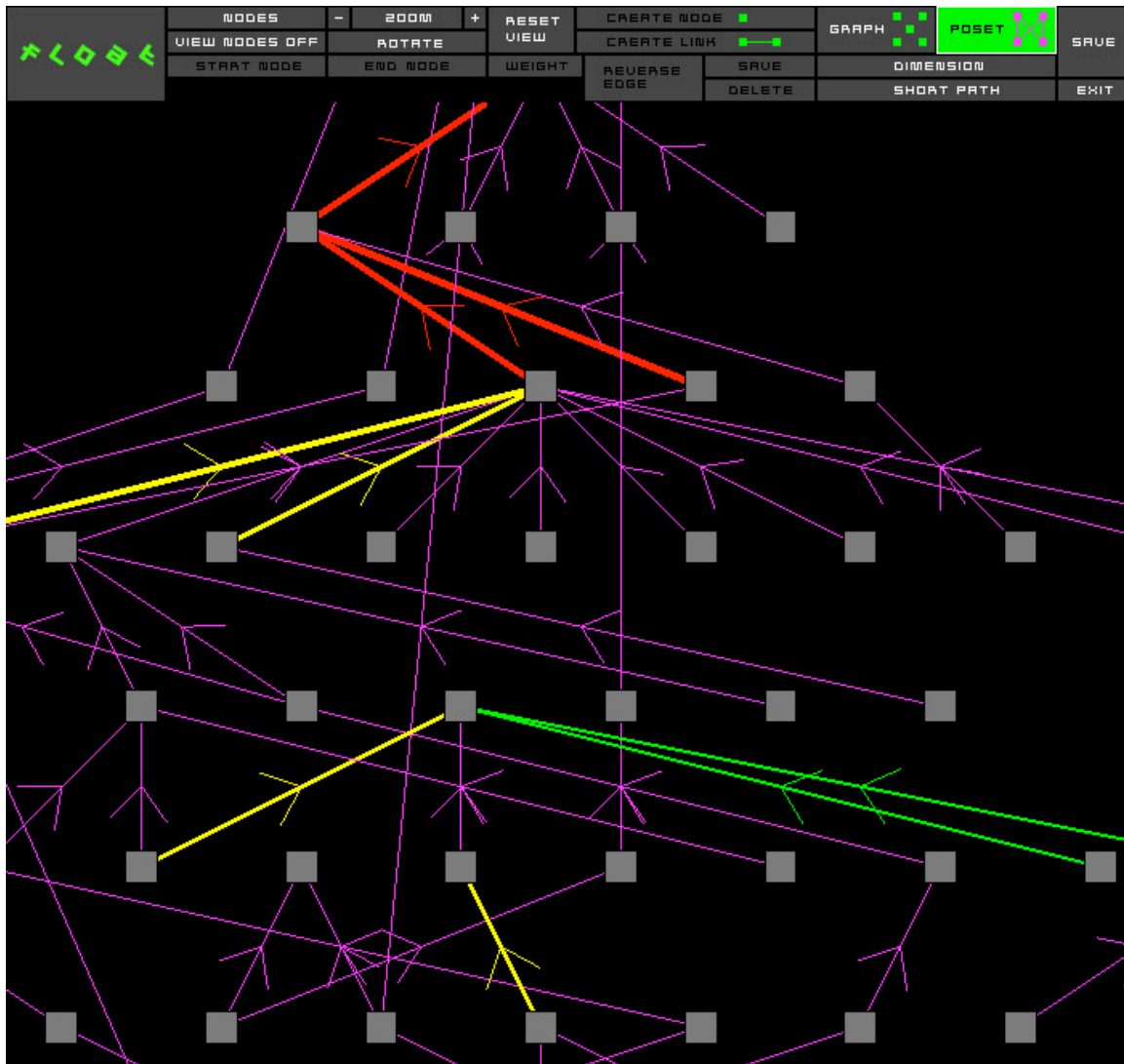
This is the default view when starting FLOAT, and also the only view where meaningful changes to the graph can be made. In this view, the user can move nodes, add links; all that has been discussed above regarding functionality is relevant to the Directed Acyclic Graph view.

View Hasse :

A secondary, optional, perspective of the graph. When this has been selected, then the graph is redrawn according to the DAG->Hasse diagram algorithm, and the following things happen regarding functionality : all forms of editing are **disabled** :

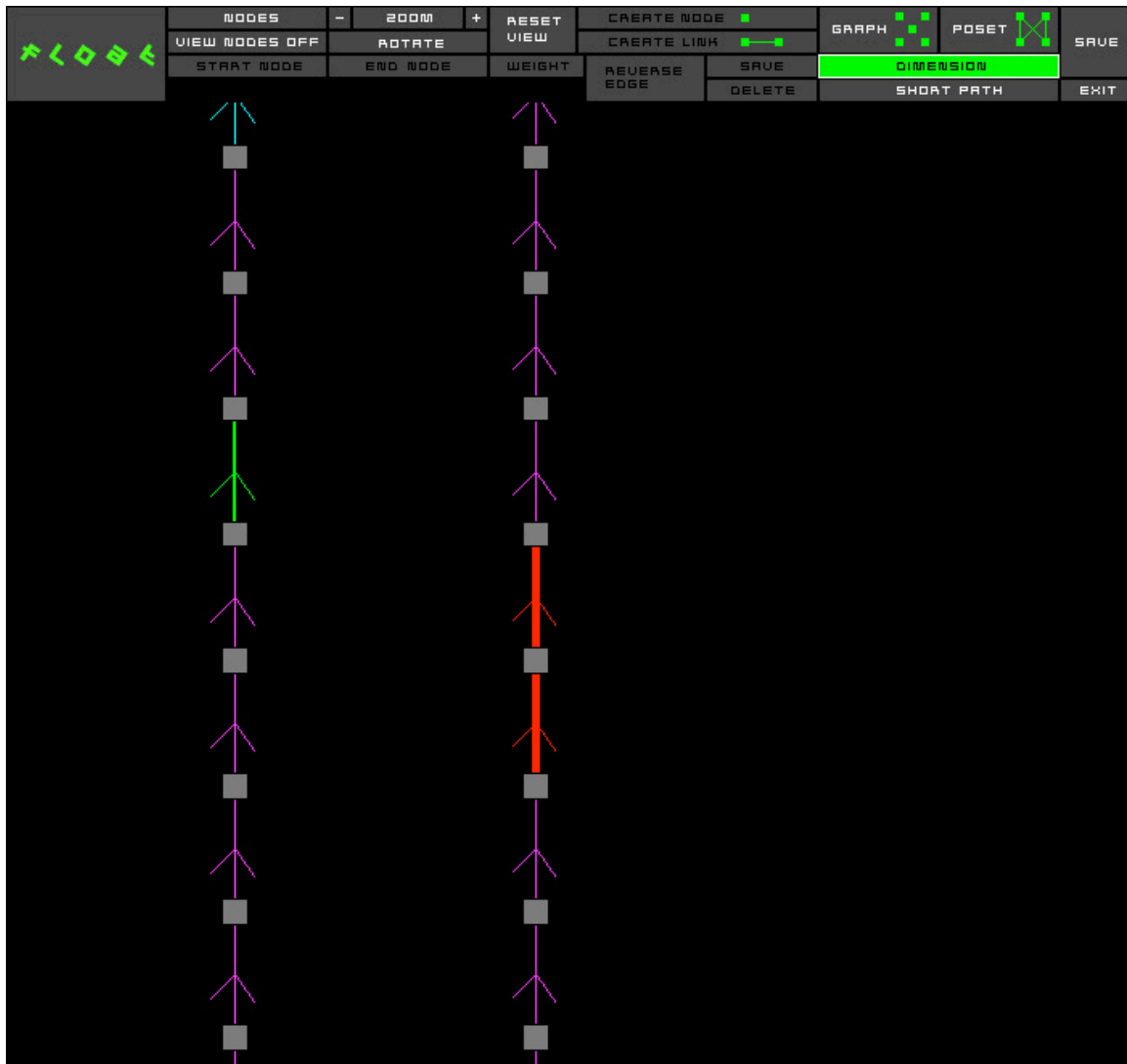
move(node), edit edge / node / text, create node / edge.

These are all restored upon return to the DAG view.



View Linear Extensions :

Exactly the same consequences as the Hasse view, but presents a different visual representation.



Save :

This button only becomes active after the user makes a change to any aspect of the graph; it is disabled as long as the client graph remains the same as the server graph. When pressed, the client attempts to connect to the server, and update the data there. If there is a timeout (internet is not connected for any reason), a message should be displayed to the user.

Exit :

This button allows the user to exit the application. It may be pressed at any time. However, if the data has been modified without being saved, then the user should be asked if he/she would like to save their data; if so, then a **Save** is performed before exiting the program.

Document creation tool :

*double click on the node and edit document
current functionality :*

1. **title** : displays the title of the node currently selected
2. **creation date** : displays the creation date of the node currently selected
3. **author** : displays the author of the node currently selected
4. **content** : displays a description of the node currently selected

