

Visualizing and Exploring Program Traces

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Today's Menu

Software Visualization: Why, What, How, Who

Our Systems (with lots of pictures)

Future Work

Software Understanding

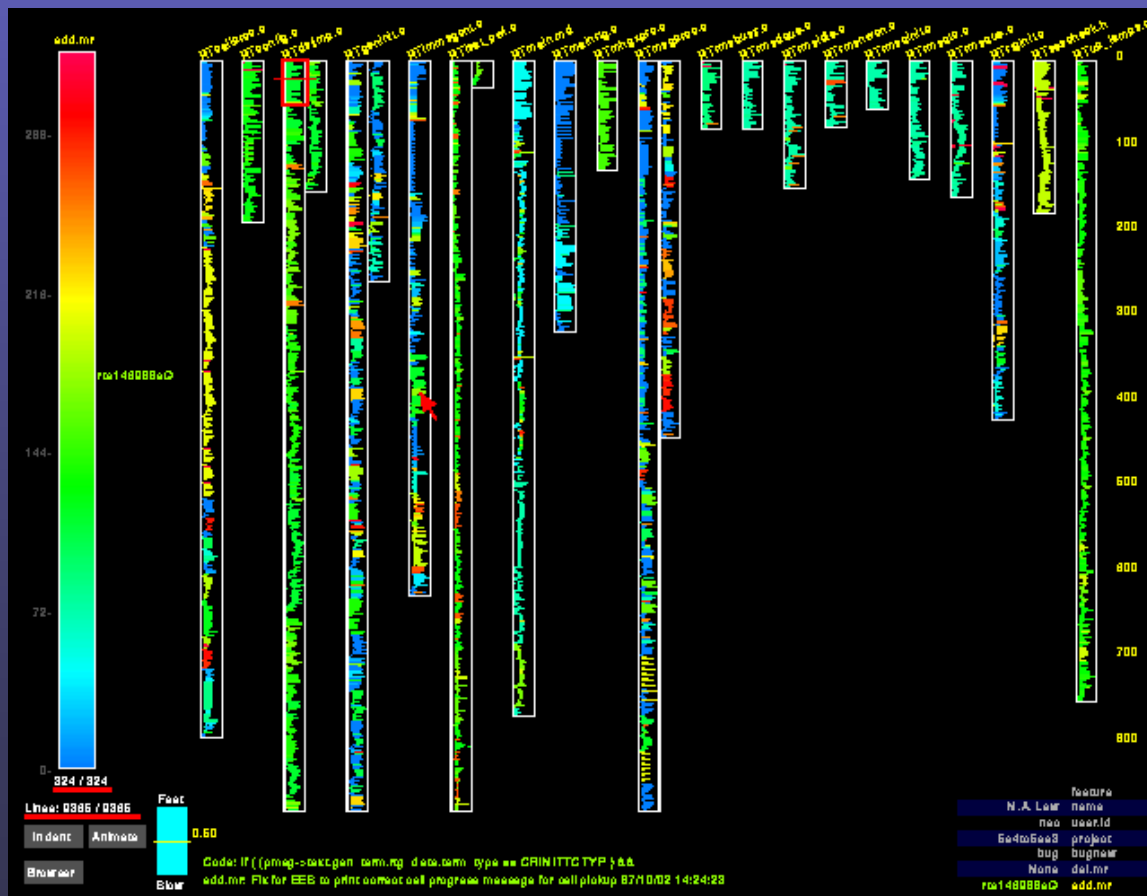
Help with answering questions about a software system

- Questions about the development process
- Questions about the concepts (algorithms)
- Questions about the execution

Development Process

Data Source: RCS, SCCS, CVS

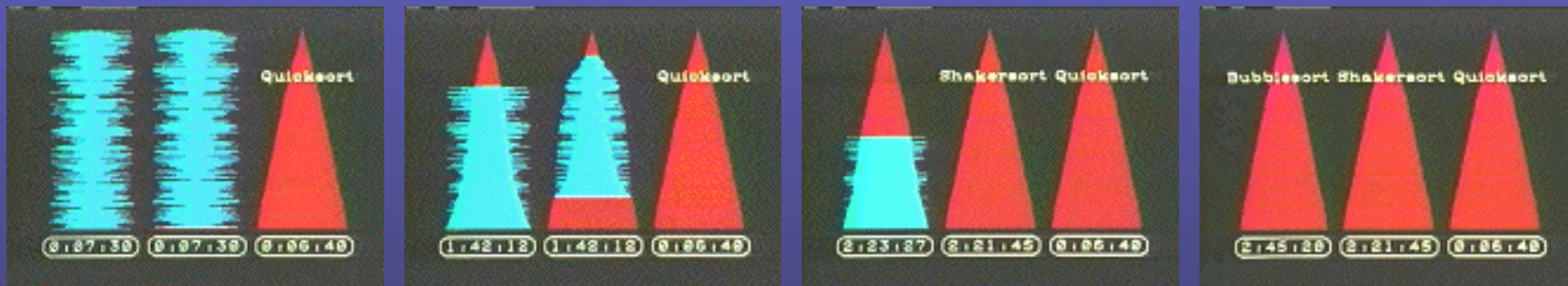
Implementation: SeeSoft



Algorithm Animation

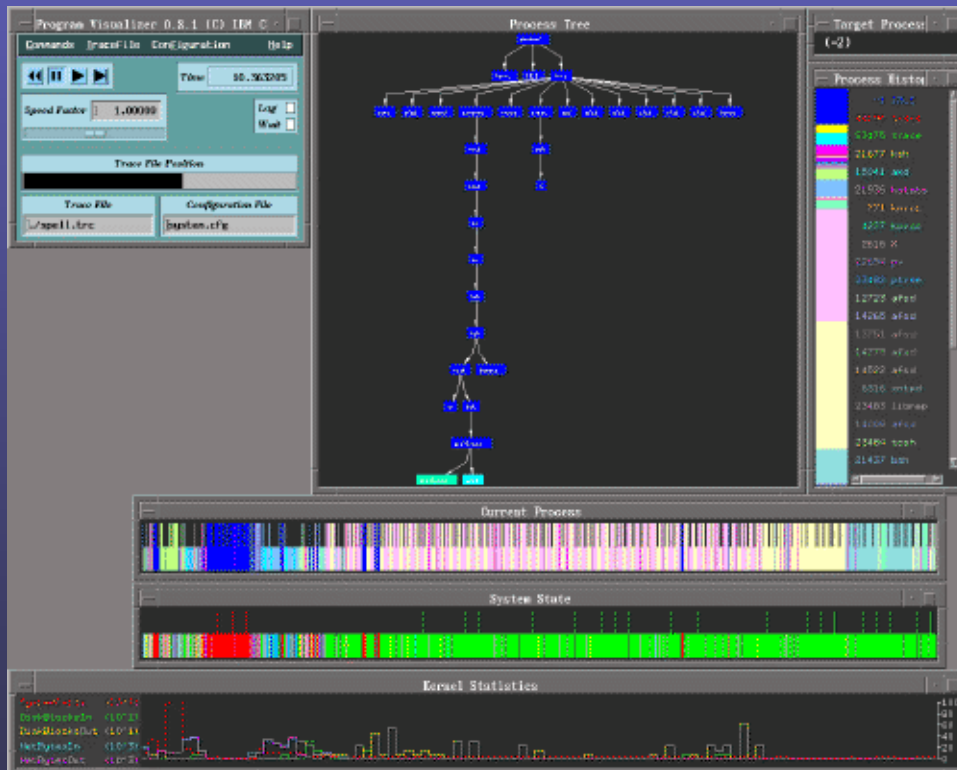
Data Source: Specific Programs or Probes in Programs

Implementations: Sorting Out Sorting, Balsa



Data Source: Tracing

Implementation: PV



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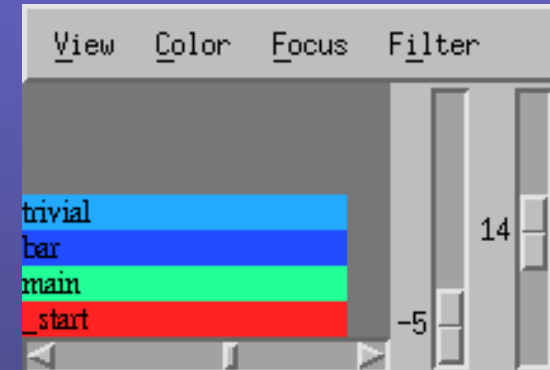
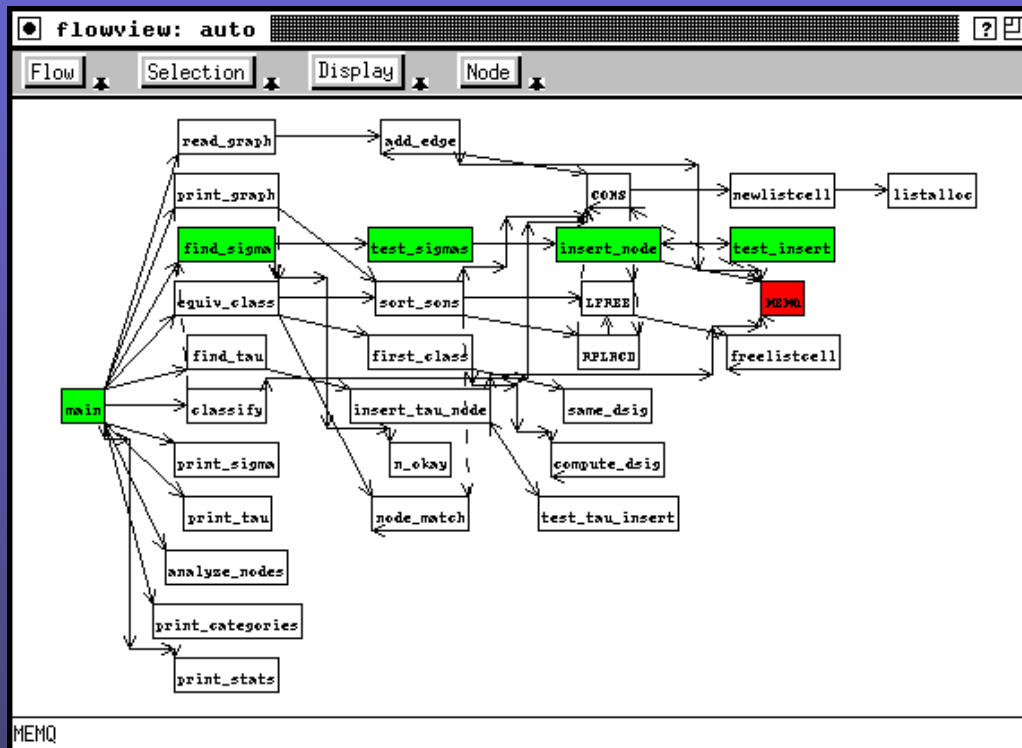
Future Work

Our Systems

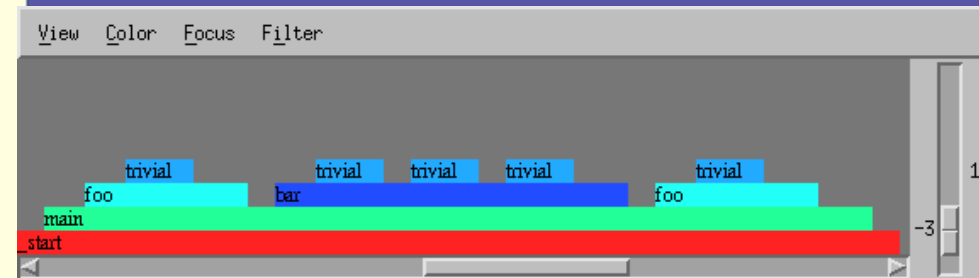
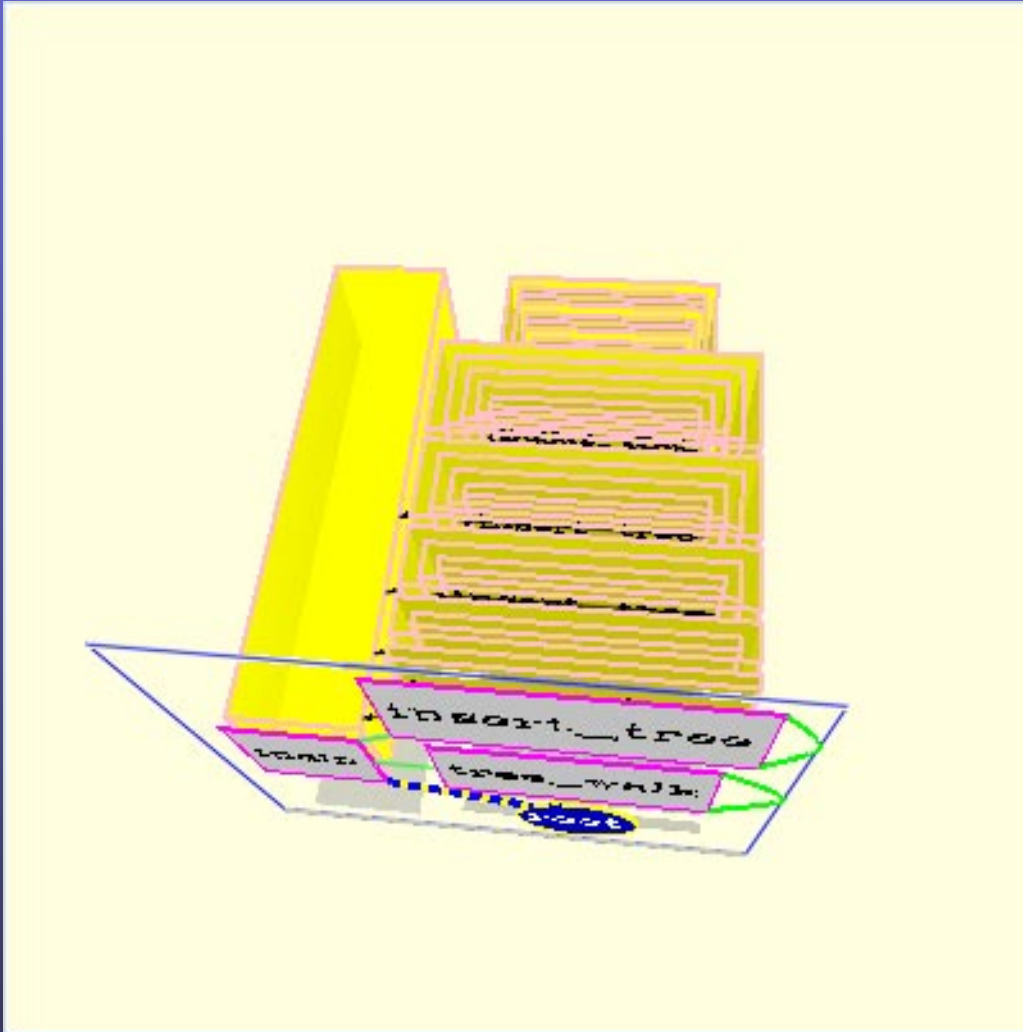
Execution Visualizations

- Field
- Desert (Cacti, Mirage, Valley)
- Almost

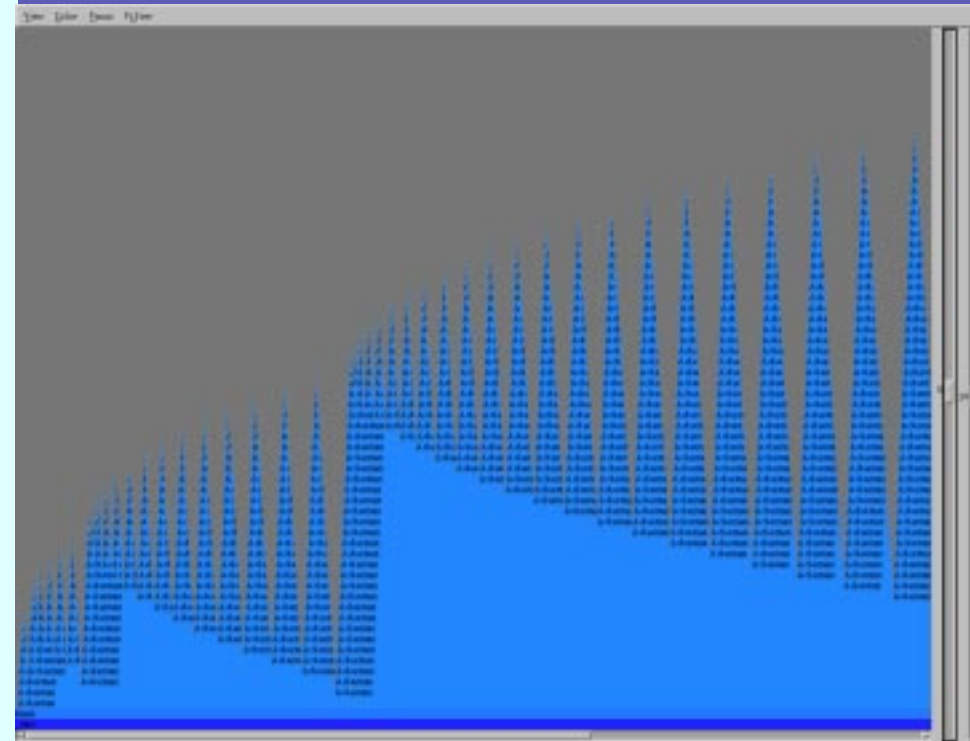
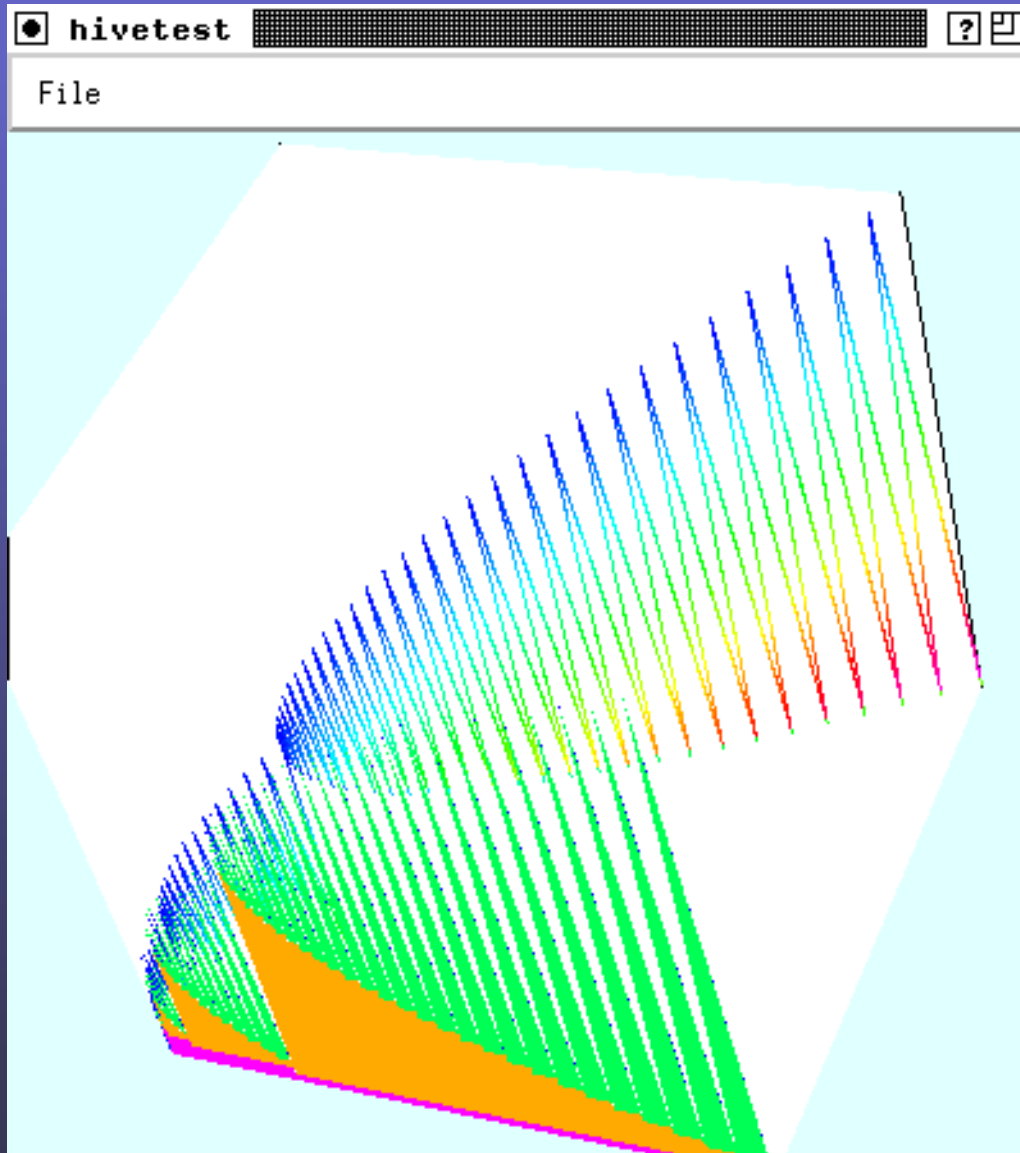
Visualizing Moments



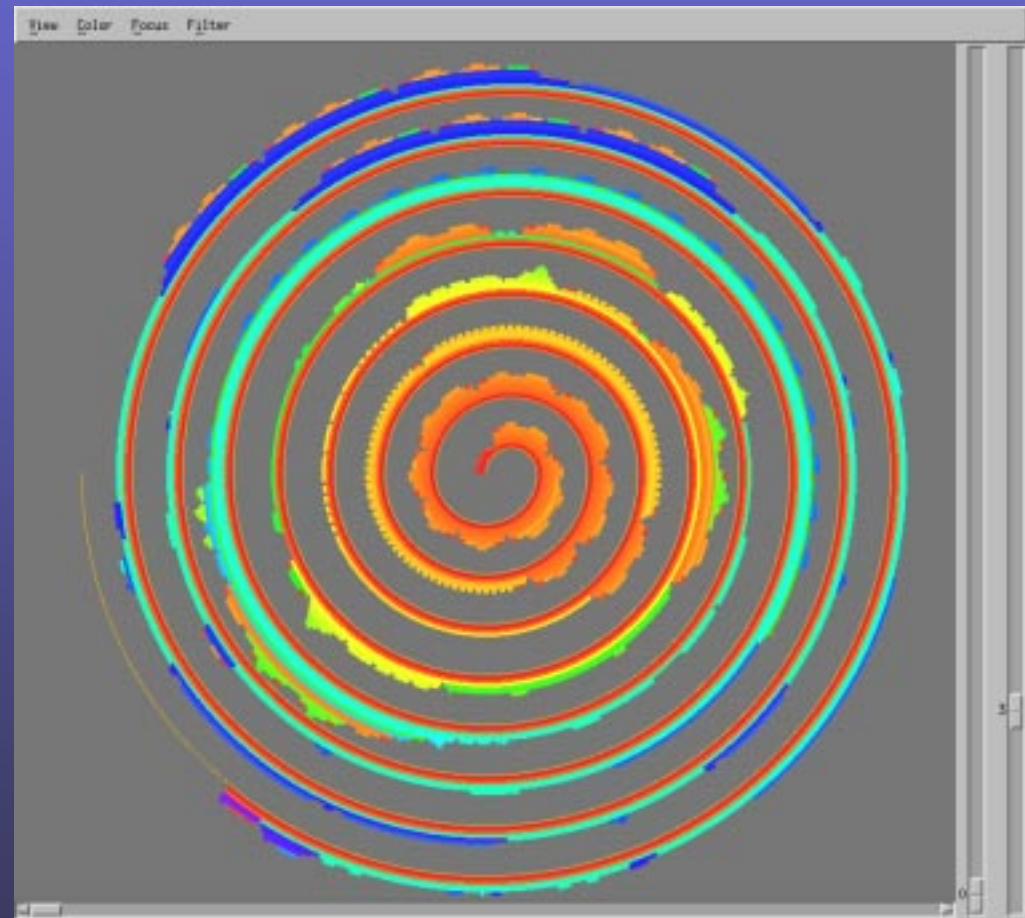
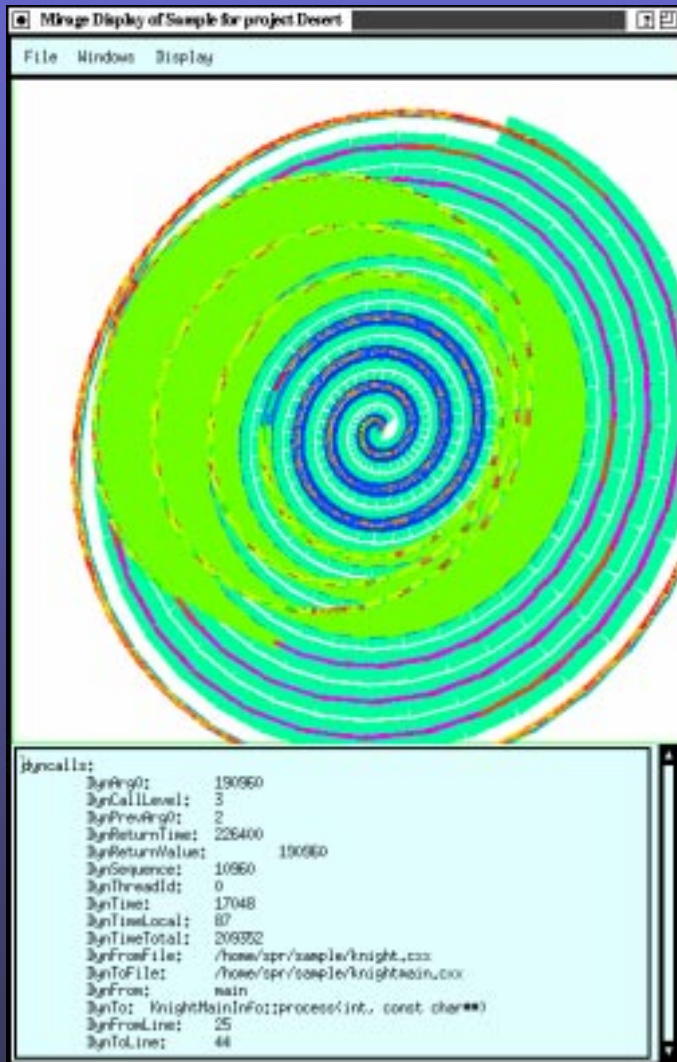
Visualizing Sequences



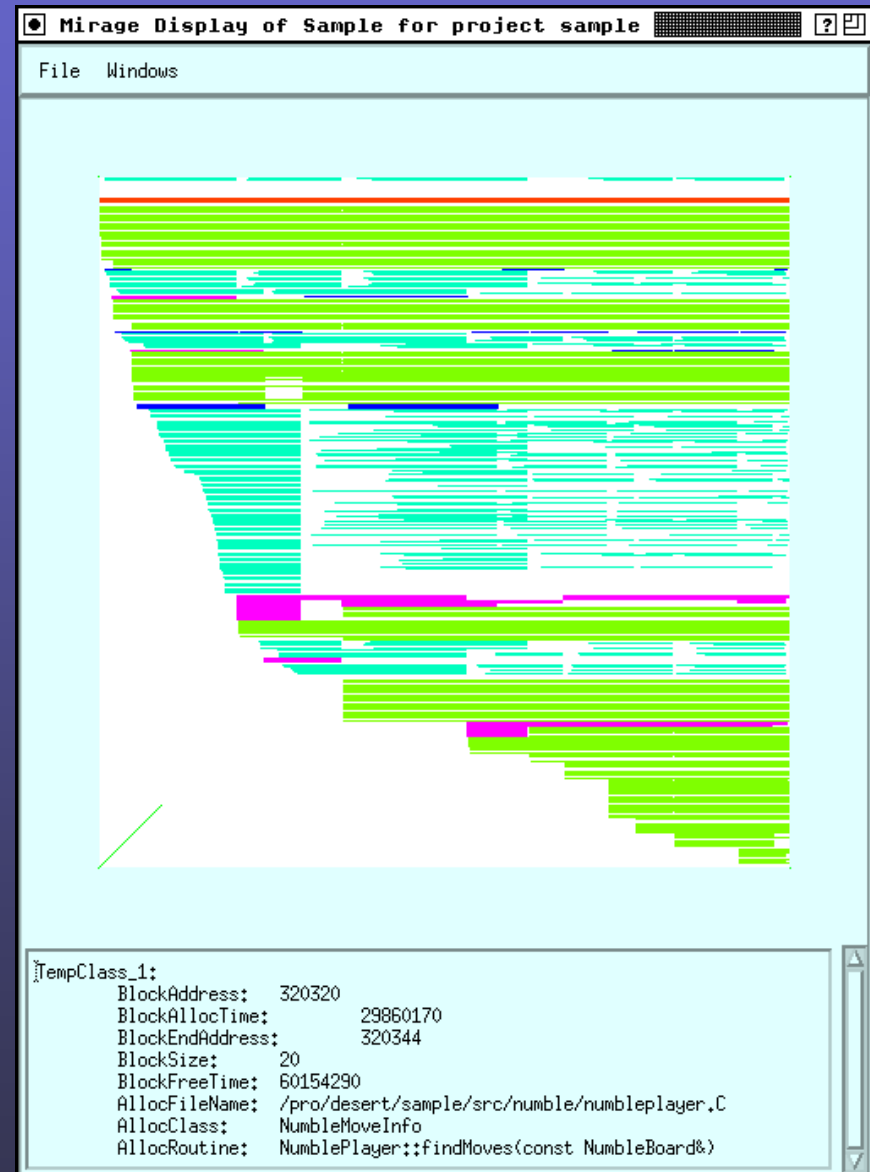
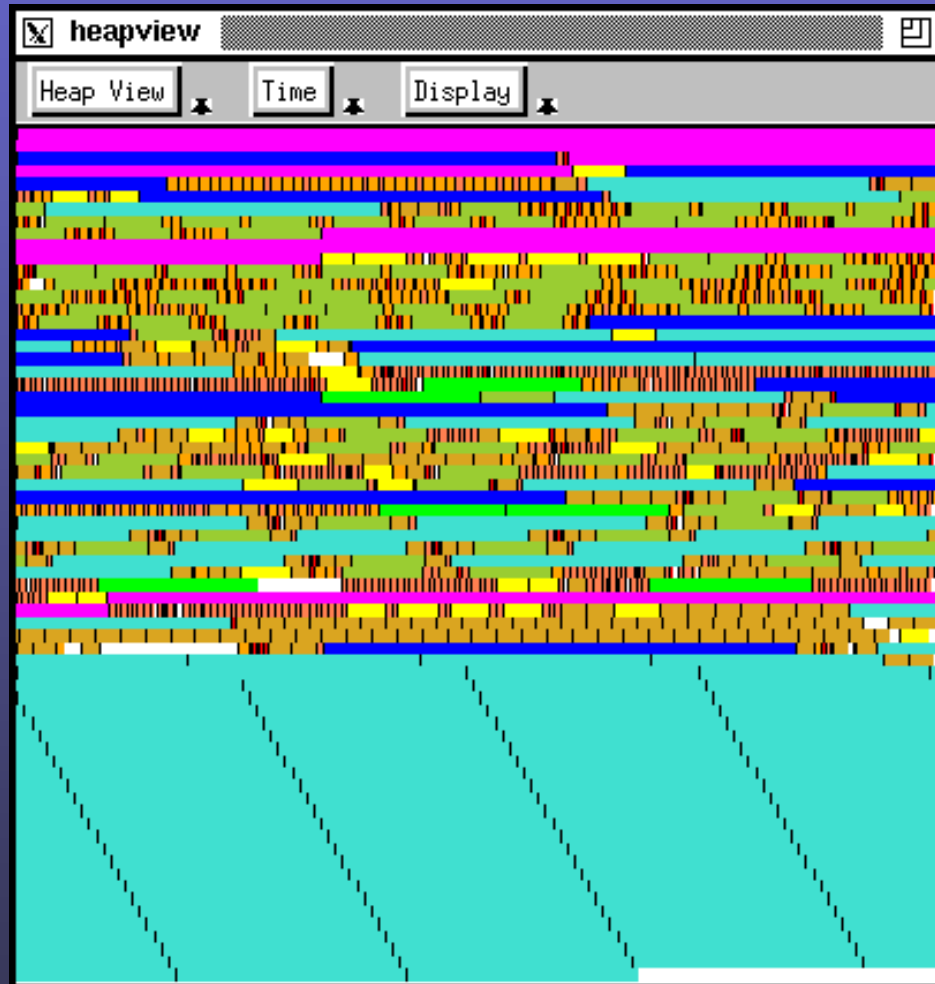
Larger Examples



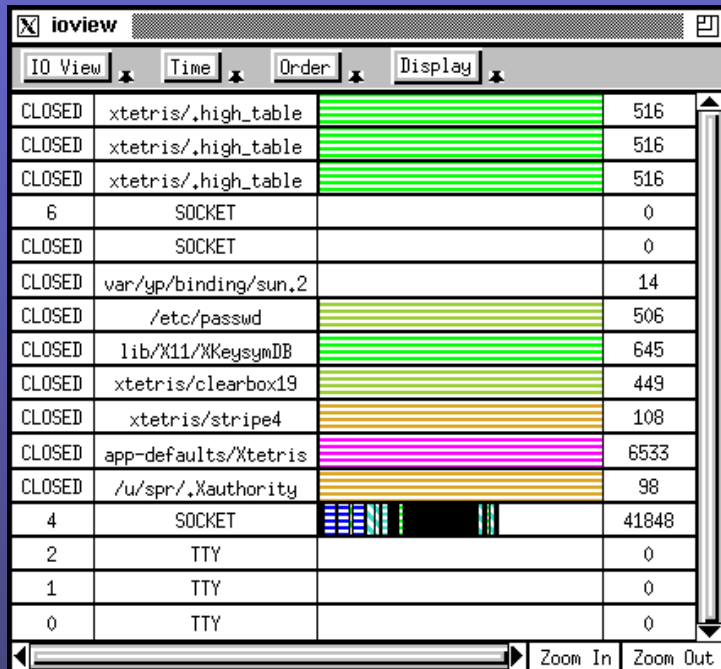
Even Larger Examples



Memory

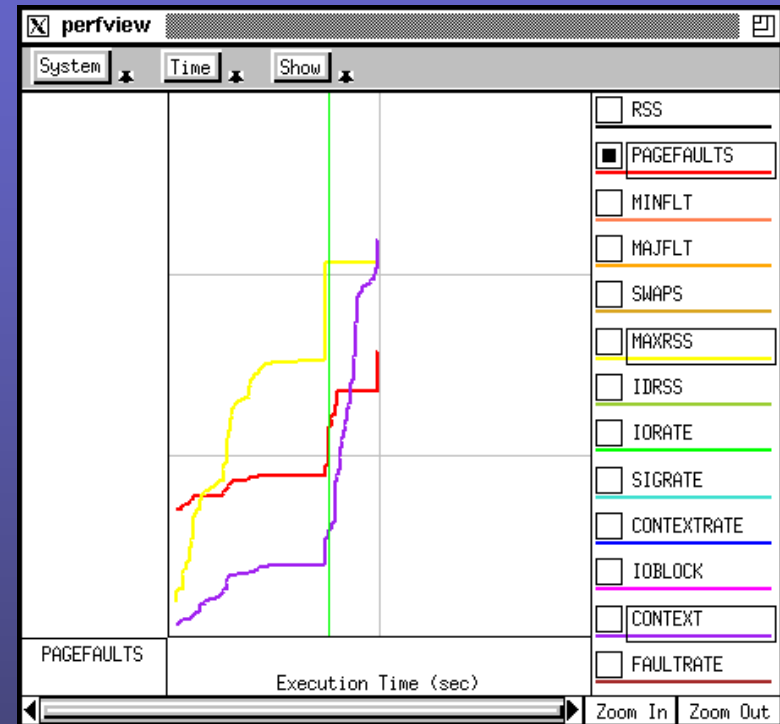


Other Aspects

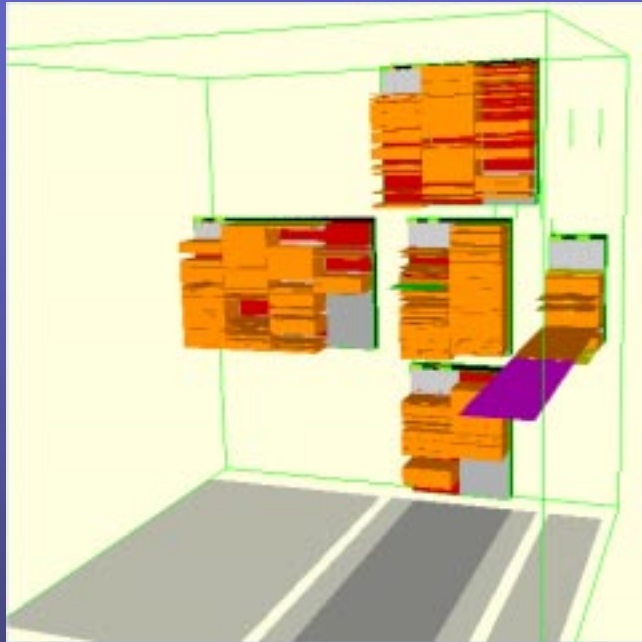


The screenshot shows the 'iotview' application window. It has a menu bar with 'IO View', 'Time', 'Order', and 'Display'. Below the menu is a table with four columns: 'Status', 'Path', 'Type', and 'Count'. The table lists various IO operations, including file reads/writes and socket operations. The 'Status' column shows 'CLOSED' for most entries. The 'Type' column shows file paths or 'SOCKET', 'TTY'. The 'Count' column shows the number of operations. The table is scrollable, and there are 'Zoom In' and 'Zoom Out' buttons at the bottom.

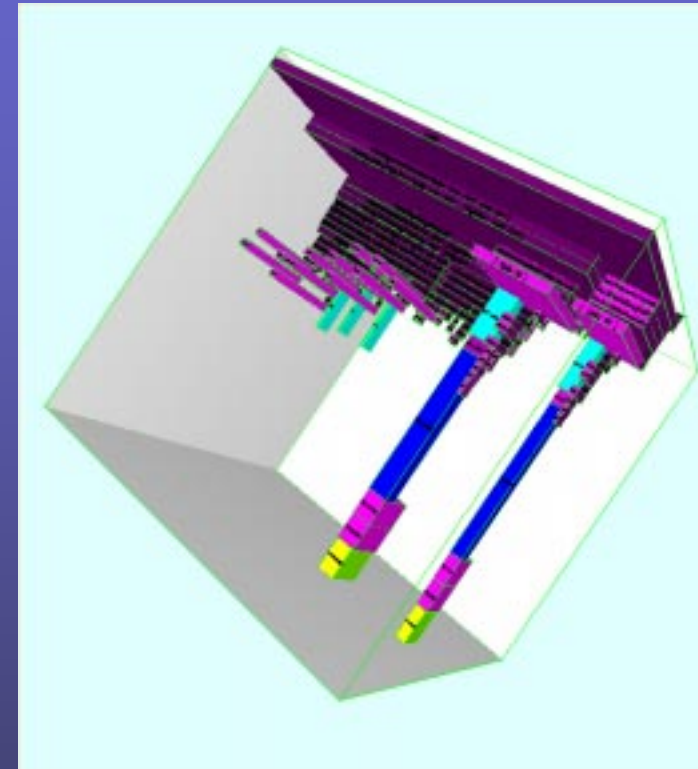
Status	Path	Type	Count
CLOSED	xtetris/.high_table		516
CLOSED	xtetris/.high_table		516
CLOSED	xtetris/.high_table		516
6	SOCKET		0
CLOSED	SOCKET		0
CLOSED	var/yp/binding/sun.2		14
CLOSED	/etc/passwd		506
CLOSED	lib/X11/XKeysymDB		645
CLOSED	xtetris/clearbox19		449
CLOSED	xtetris/stripe4		108
CLOSED	app-defaults/Xtetr		6533
CLOSED	/u/spr/.Xauthority		98
4	SOCKET		41848
2	TTY		0
1	TTY		0
0	TTY		0



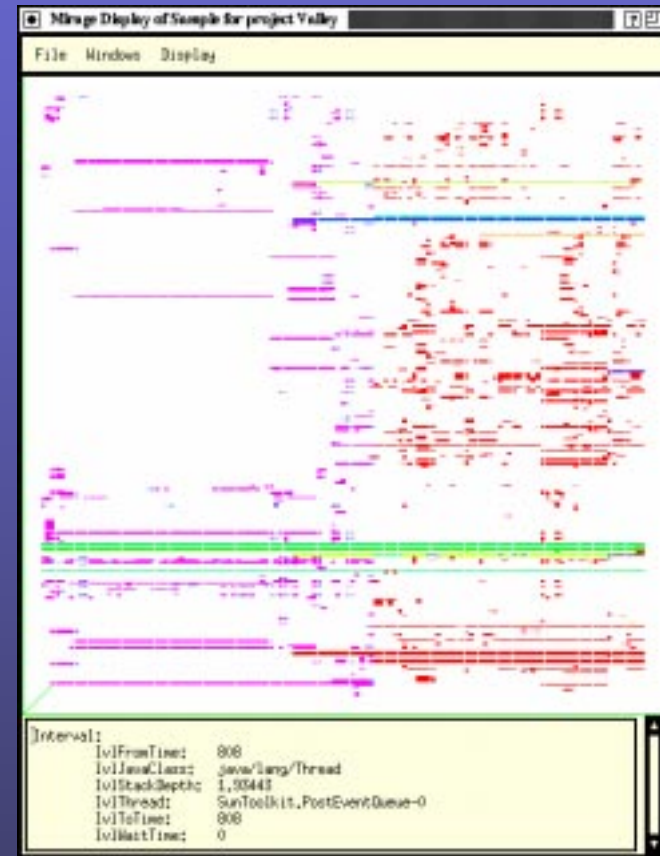
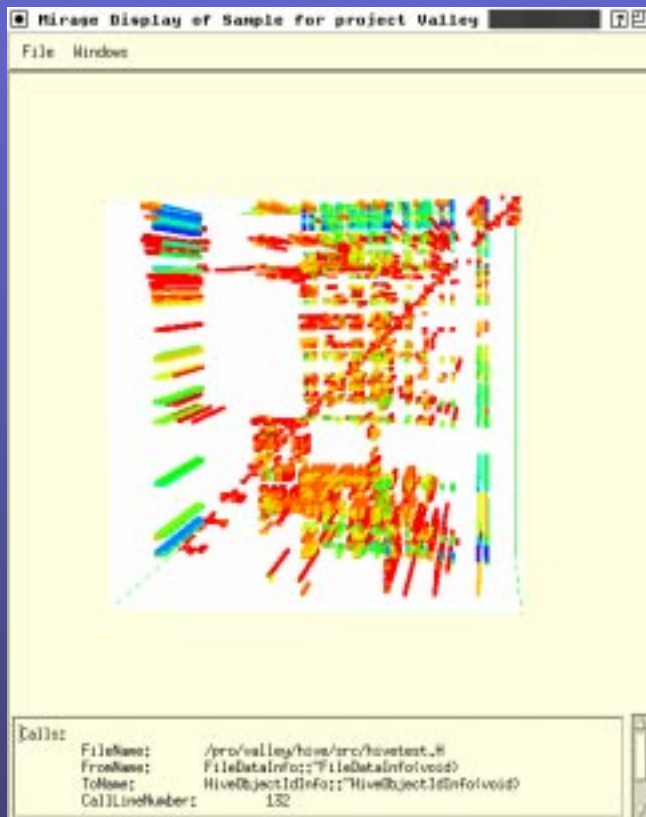
Profiling



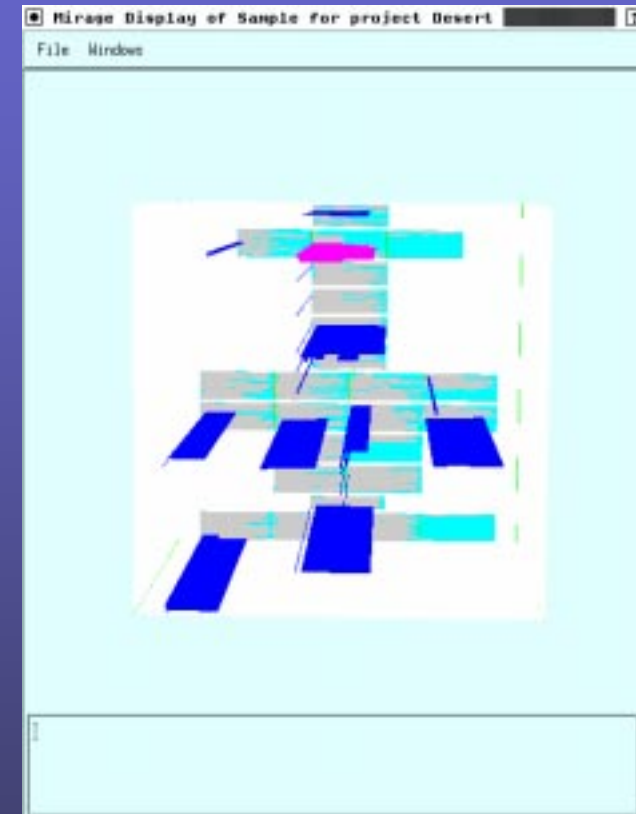
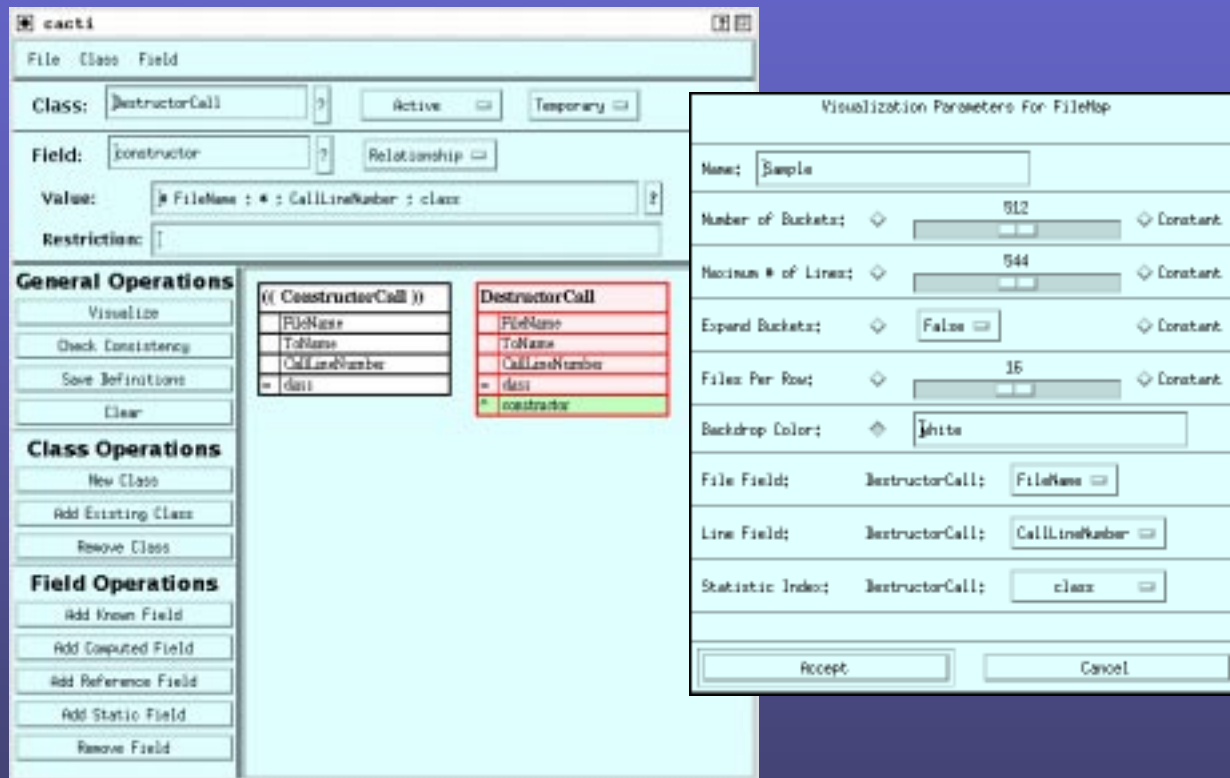
Profile	Selection	Display	Update
test_insert		1.13	
insert_node		0.38	
MEM		0.24	
main		0.11	
account		0.11	
insert_tau_node		0.03	
_doprint		0.02	
test_tau_insert		0.02	
compute_dsig		0.02	
equiv_class		0.01	
scanf		0.01	
sort_xors		0.01	
same_dsig		0.00	
node_switch		0.00	
test_sigmas		0.00	
classify		0.00	
find_xigma		0.00	
print_xigma		0.00	
isokan		0.00	
print_graph		0.00	
find_tau		0.00	
print_tau		0.00	
analyze_nodes		0.00	
print_categories		0.00	
print_stats		0.00	
COMS		0.00	
addEdge		0.00	
read_graph		0.00	
LFREE		0.00	
first_class		0.00	
newlistcell		0.00	



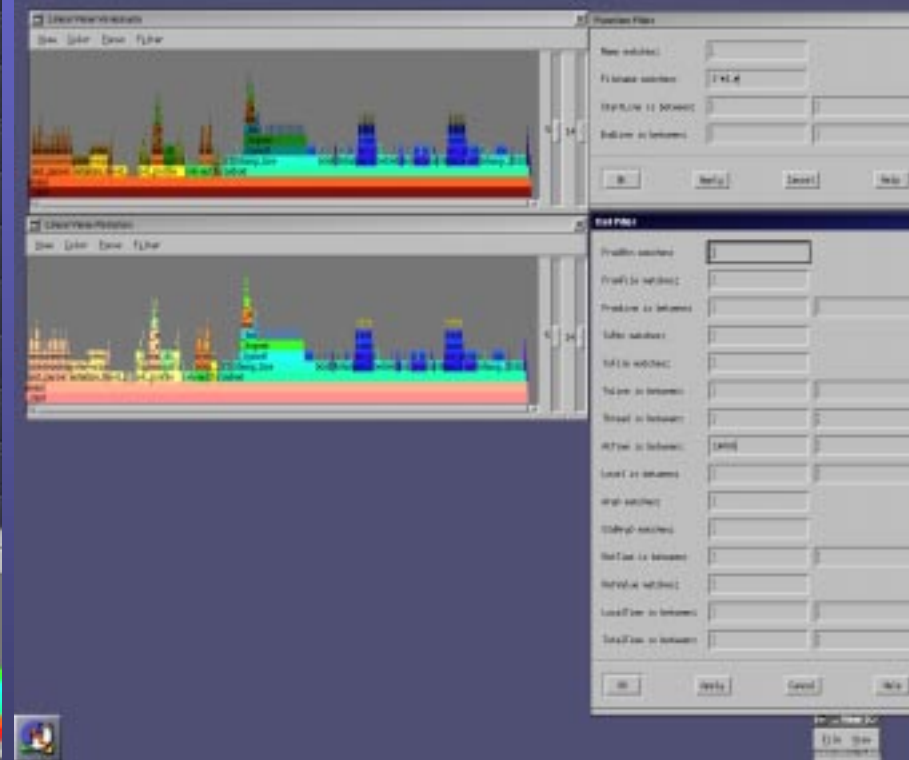
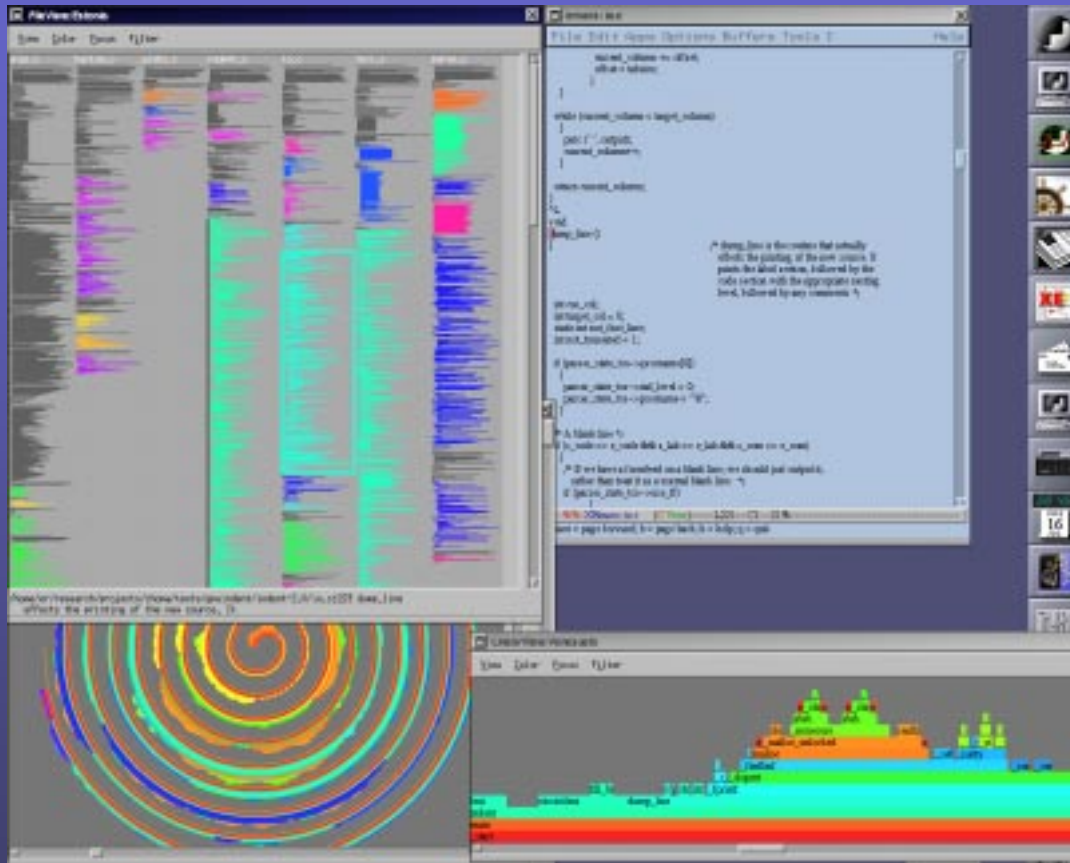
Execution Summaries



Explorations I: Cacti



Explorations II: Almost



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Future Work

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- Better View Linking
- Selective Tracing
- Art-Inspired Visualizations
- AI techniques for Summarizing