

Visualization of Algorithms



Herbert L. Dershem
 Computer Science
 dershem@cs.hope.edu

Education:
 Ph.D. Purdue University, Computer Science
Areas of expertise: algorithms, theory,
 Programming languages

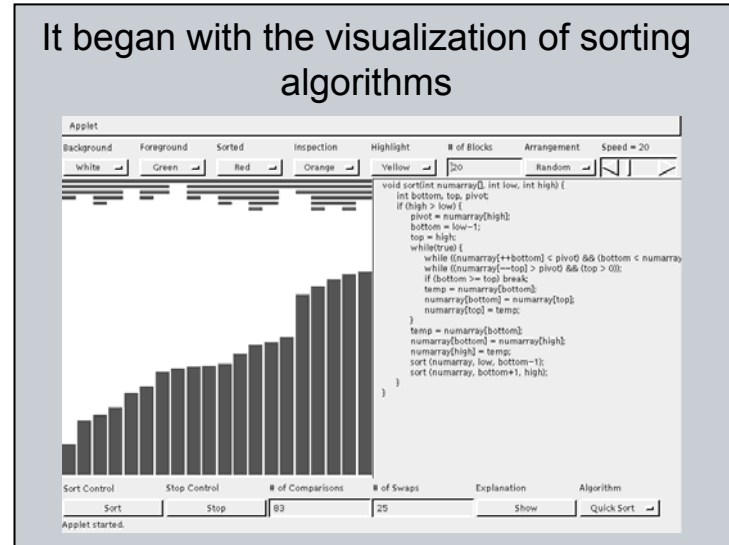
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 NSF CSEMS Scholarship grant
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Key publications and presentations
 Dershem, H.L., McFall, R.L., and N. Uti*, "A Linked List Prototype for the Visual Representation of Abstract Data Types," *Interactive Multimedia Electronic Journal of Computer-Enhanced Learning*, 4,2(Oct, 2002).
 Dershem, H.L. and P. Brummund, "Tools for Web-Based Sorting Animation," *SIGCSE Bulletin*, 30,1(Mar, 1998), 222-226.

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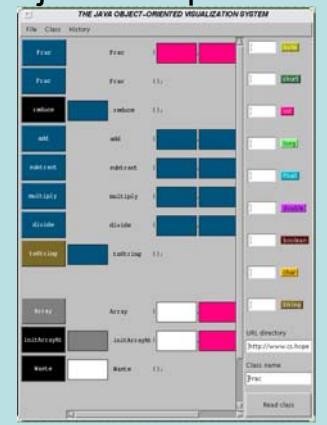
My research involves the visualization of algorithms and data structures.

It began with the visualization of sorting algorithms



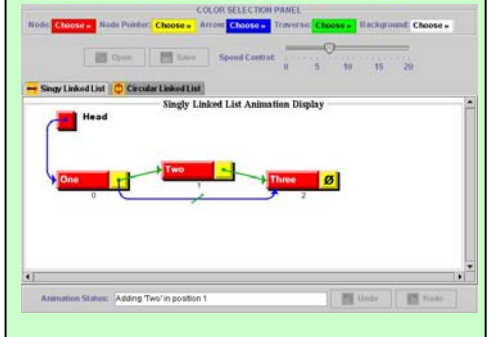
The screenshot shows a Java applet interface for visualizing sorting algorithms. It features a bar chart with bars of varying heights representing an array. To the right of the chart is a code editor displaying a sorting algorithm in Java. The interface includes several control panels: 'Background' (White, Green, Red, Orange, Yellow), 'Foreground' (Green, Red, Orange, Yellow), 'Sorted' (Red, Orange, Yellow), 'Inspection' (Orange, Yellow), 'Highlight' (Yellow), '# of Blocks' (20), 'Arrangement' (Random), and 'Speed' (20). Below the chart are 'Sort Control' (Sort, Stop) and 'Statistics' (# of Comparisons: 83, # of Swaps: 25). A table at the bottom lists 'Explanation' and 'Algorithm' with buttons for 'Show' and 'Quick Sort'.

ObVis is automated visualization of Java object manipulation.



The screenshot shows the 'THE JAVA OBJECT-ORIENTED VISUALIZATION SYSTEM' interface. It features a central workspace with various colored blocks representing objects. On the left, there are 'File' and 'Class' lists. On the right, there are 'URL directory' and 'Class name' fields. The interface is designed for visualizing the state and manipulation of Java objects.

JVALL is an automatic visualization of data structures in Java. The example below is linked list.



The screenshot shows the 'Singly Linked List Animation Display' interface. It features a 'COLOR SELECTION PANEL' at the top with options for 'Node', 'Arrow', 'Traverse', and 'Background'. Below this is a 'Speed Control' slider. The main display area shows a 'Singly Linked List' with three nodes labeled 'One', 'Two', and 'Three', each with a pointer to the next node. The 'Animation Status' at the bottom indicates 'Adding Two in position 1'.