

# Network Workbench

A Workbench for Network Scientists

**Goal:** Develop a large-scale network analysis, modeling and visualization toolkit for physics, biomedical, and social science research.

**Amount:** \$1,120,926, NSF IIS-0513650 award

**Duration:** Sept. 2005 - Aug. 2008

**Website:** <http://nwb.slis.indiana.edu>

# Investigators

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# Software Team

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# Advisory Board

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# Outline

- ✿ What is the NWB Tool and How Does it Work?
- ✿ Using the NWB Tool for Scientometrics.
- ✿ Using the NWB Tool for Discrete Network Dynamics.

Developed at the Information Visualization Lab at Indiana University <http://www.sis.indiana.edu>  
Barabasi-Albert Modeling was selected.  
Author: Implemented by Santo Fortunato.  
See also: "A.-L. Barabasi & R. Albert (1999), "Emergence of scaling in random networks", Science, 286:509-512."  
Documentation URL:  
[http://www.nd.edu/~networks/Publication%20Categories/03%20Journal%20Articles/Physics/EmergenceRandom\\_Science](http://www.nd.edu/~networks/Publication%20Categories/03%20Journal%20Articles/Physics/EmergenceRandom_Science)

### Preferences

type filter text

- Errors and Logging
- File System
- General IVC
- Install/Update
- Scheduler

#### Errors and Logging

Show Critical Errors on Console  
 Show All Errors on Console

User Logfile Directory: C:\apps\NWB\logs

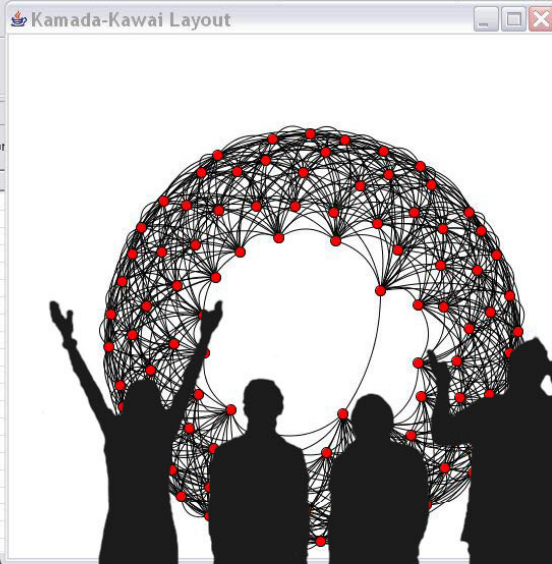
Error Logfile Directory: C:\apps\NWB\logs

User Logfile Size Limit (kb): 100

Error Logfile Size Limit (kb): 100

Maximum number of user log files to keep: 20

Maximum number of error log files to keep: 20



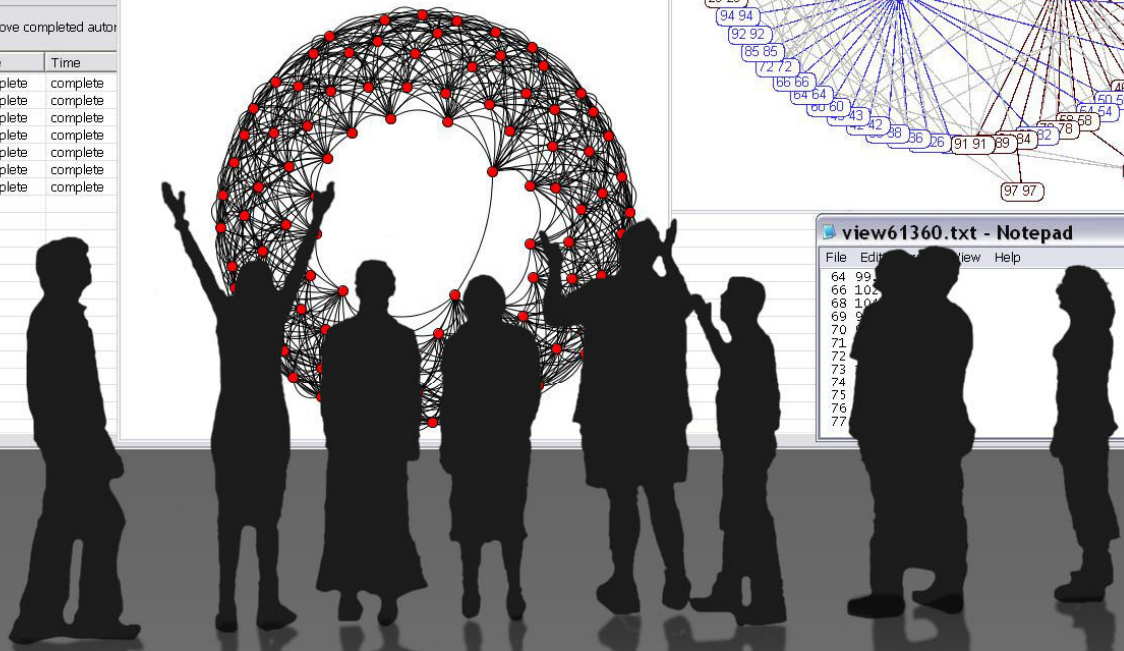
### Scheduler

Schedule... Remove From List Remove completed auto

Algorithm Name	Date	Time
<input checked="" type="checkbox"/> Barabasi Albert Model...	complete	complete
<input checked="" type="checkbox"/> Small World.1	complete	complete
<input checked="" type="checkbox"/> Erdos Random Graph.1	complete	complete
<input checked="" type="checkbox"/> Page Rank Algorithm.1	complete	complete
<input checked="" type="checkbox"/> One Point Correlation.1	complete	complete
<input checked="" type="checkbox"/> Directed Degree Distri...	complete	complete
<input checked="" type="checkbox"/> Undirected KNN.1	complete	complete

### view61360.txt - Notepad

```
File Edit View Help
64 99
66 100
68 101
69 102
70
71
72
73
74
75
76
77
```



What is the NWB Tool and How Does it Work?

# Network Workbench. . . .

- is built on a **plugin architecture** called OSGi.
- runs algorithms written in **many languages**.
- automatically converts data** to and from formats algorithms consume and produce.
- runs on **many platforms**, including Windows, OS X, Linux, and Solaris.
- is **Open Source**.

# It Works With Networks

- ❖ But it **doesn't know** about networks.
- ❖ It works with **tables** and other data representations, too.
- ❖ Use it to **model, analyze, and visualize**.
- ❖ Easy to integrate **small algorithms** currently handled manually or with ad-hoc scripting.

# Using the NWB Tool for Scientometrics.

# Using the NWB Tool for Scientometrics.

101 results found (Set #11) ([Why 101?](#))

Go to Page:  of 11

Records 1 -- 10

◀◀◀ [ 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 ] ▶▶▶

Use the checkboxes to select records for output. See the sidebar for options.

- 1. Pastor-Satorras R, Vespignani A  
[Epidemic spreading in scale-free networks](#)  
PHYSICAL REVIEW LETTERS 86 (14): 3200-3203 APR 2 2001  
Times Cited: [451](#)  

- 2. Pastor-Satorras R, Vazquez A, Vespignani A  
[Dynamical and correlation properties of the Internet](#)  
PHYSICAL REVIEW LETTERS 87 (25): Art. No. 258701 DEC 17 2001  
Times Cited: [224](#)  

- 3. Barrat A, Barthelemy M, Pastor-Satorras R, et al.  
[The architecture of complex weighted networks](#)  
PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA 101 (11): 3747-3752 MAR 16 2004  
Times Cited: [190](#)  

- 4. Pastor-Satorras R, Vespignani A  
[Epidemic dynamics and endemic states in complex networks](#)  
PHYSICAL REVIEW E 63 (6): Art. No. 066117 Part 2 JUN 2001  
Times Cited: [164](#)  

- 5. Vazquez A, Pastor-Satorras R, Vespignani A  
[Large-scale topological and dynamical properties of the Internet](#)  
PHYSICAL REVIEW E 65 (6): Art. No. 066130 Part 2 JUN 2002  
Times Cited: [123](#)  

- 6. Vespignani A, Zapperi S  
[How self-organized criticality works: A unified mean-field picture](#)  
PHYSICAL REVIEW E 57 (6): 6345-6362 JUN 1998  
Times Cited: [111](#)  


Thank you.

NSF IIS-0513650 award

\* <http://nwb.slis.indiana.edu>

\* <http://cishell.org>