CNATool

Renata Souza Freitas Dantas Barreto[a], Hernane Borges de Barros Pereira[a], Roberto Luiz Souza Monteiro[a]

[a]*SENAI CIMATEC University Center*
Av. Orlando Gomes, 1845,
Piatã,
Salvador - BA,
41650-010

Abstract

CNATool is an online program for analyzing complex and social networks. It was developed using the MaiaScript programming language to allow quick and simplified analysis of graphs of complex networks from any device connected to the Internet. Currently it supports load graphs in Pajek and JSON formats, create artificial graphs (random, scale-free, small word and hybrid), display network graph, layout graph, graph properties (average degree, density, average clustering coefficient, average shortest path, diameter and graph efficiency, display detailed properties of vertices (degrees, clustering and centrality), save graph in Pajek format, export graph in SVG format, save a summary of graphs properties in HTML format.

Keywords: graph, network, degree, clustering, centrality, Pajek

Email addresses: renatasouzabarreto@gmail.com (Renata Souza Freitas Dantas Barreto), hernane@fieb.org.br (Hernane Borges de Barros Pereira), roberto.monteiro@fieb.org.br (Roberto Luiz Souza Monteiro)

URL: http://www.souzamonteiro.com (Roberto Luiz Souza Monteiro)

Code metadata

Nr.	Code metadata description	Please fill in this column
C1	Current code version	1.4.1
C2	Permanent link to code/repository used for this code version	*https://github.com/souzamonteiro/cnatool.git*
C3	Web site	*http://www.maiascript.com/maiascript/cnatool*
C4	Legal Code License	Apache-2.0 License
C5	Code versioning system used	git
C6	Software code languages, tools, and services used	MaiaScript, JavaScript, HTML & CSS
C7	Compilation requirements, operating environments	Node.js
C8	If available Link to developer documentation/manual	*http://www.maiascript.com/cnatool/doc/cna*/1.3.6/*in*
C9	Support email for questions	*support@maiascript.com*

Table 1: Code metadata

1. Motivation and significance

[1] Introduce the scientific background and the motivation for developing the software.

Explain why the software is important, and describe the exact (scientific) problem(s) it solves.

Indicate in what way the software has contributed (or how it will contribute in the future) to the process of scientific discovery; if available, this is to be supported by citing a research paper using the software.

Provide a description of the experimental setting (how does the user use the software?).

Introduce related work in literature (cite or list algorithms used, other software etc.).

2. Software description

Describe the software in as much as is necessary to establish a vocabulary needed to explain its impact.

2.1. Software Architecture

Give a short overview of the overall software architecture; provide a pictorial component overview or similar (if possible). If necessary provide implementation details.

2.2. Software Functionalities

Present the major functionalities of the software.

2.3. Sample code snippets analysis (optional)

3. Illustrative Examples

Provide at least one illustrative example to demonstrate the major functions.

Optional: you may include one explanatory video that will appear next to your article, in the right hand side panel. (Please upload any video as a single supplementary file with your article. Only one MP4 formatted, with 50MB maximum size, video is possible per article. Recommended video dimensions are 640 x 480 at a maximum of 30 frames/second. Prior to submission please test and validate your .mp4 file at $http://elsevier-apps.sciverse.com/GadgetVideoPodcastPlayerWeb/verification$. This tool will display your video exactly in the same way as it will appear on ScienceDirect.).

4. Impact

This is the main section of the article and the reviewers weight the description here appropriately

Indicate in what way new research questions can be pursued as a result of the software (if any).

Indicate in what way, and to what extent, the pursuit of existing research questions is improved (if so).

Indicate in what way the software has changed the daily practice of its users (if so).

Indicate how widespread the use of the software is within and outside the intended user group.

Indicate in what way the software is used in commercial settings and/or how it led to the creation of spin-off companies (if so).

5. Conclusions

Set out the conclusion of this original software publication.

6. Conflict of Interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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References

[1] A.-L. Barabási, R. Albert, Emergence of scaling in random networks, Science 286 (5439) (1999) 509–512. doi:10.1126/science.286.5439.509.