Journal of Statistical Software

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The Journal of Statistical Software is an e-journal that publishes and reviews open source statistical software. We discuss the history, motivation, and implementation of the journal. © 2009 John Wiley & Sons, Inc. *WIREs Comp Stat* 2009 1 128–129

INTRODUCTION

The Journal of Statistical Software (JSS) is an electronic open access journal, published by the American Statistical Association (ASA). It was founded in 1996 by Jan de Leeuw (UCLA) as a service to the statistics community. JSS provides an outlet for research software developed for and by statisticians. Software for commercial and open source environments, to be either compiled or interpreted, is considered. The journal publishes the software (in code form) along with an article describing the software. This is often like a manual, typically also explaining the transition from the underlying theory to the computational tools, and providing some application examples. In addition JSS publishes book reviews, software reviews, and code snippets.

There were various reasons at the time to start a statistics software journal, and some of the reasons have become more pertinent with recent developments.

- Statistical software is one of the core products of research in computational statistics/statistical computing. It should be reviewed, published, and cited like other scientific publications. For this, it is essential to establish a peer-review process for software and documentation. Furthermore, the visibility and usability of software publications must be increased. Dumping code on an FTP server such as STATLIB does not accomplish this.
- After the demise of the software section of Applied Statistics, The American Statistician was only one other decent outlet for software reviews, but it does not evaluate code, and concentrates on commercial packages.

- Statistics software is playing an increasing role in both computational and applied statistics.
- For reproducible research, it is essential that software, no matter if it is written for a commercial or an open source environment, is available in source code form so that computations can be replicated.
- In the last 10 years the meteoric rise of R makes it desirable to have good documentation of the thousands of contributed packages. For commercial environments such documentation is usually available with the product, for open source environments separate publication media are needed.

BOARD

It was clear, from the beginning, that specialists in different languages were needed on the board. Remember that all code submission were reviewed. In addition, for visibility and respectability, leading researchers in computational statistics and statistics computation were needed on the board. In the last 10 years this has meant that there has been a considerable overlap between the R developer community, in particular the R core group, responsible for developing and maintaining R, and the JSS editorial board. Partially as a consequence of this the policies of the board promote open source, open access, and reproducibility wherever possible.

GROWTH

New journals, especially e-journals with no impact rating and low visibility, have a difficult time getting off the ground. In 1996 JSS published a total of 3 articles. This went up to about 10 by 2002. In 2004 there were 23 articles, and JSS was published in three volumes. In 2007 there were 66 articles in 7 volumes.

In 2004 the first special volume was published. Special volumes have guest editors and reviews are handled by the guest editors in any way they see fit.

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There are now seven special volumes, and quite a few more are in the preparation stages.

Volume 10, 2004 Robust Statistical Methods.

Volume 13, 2004 Lisp-Stat, Past, Present and Future.

Volume 18, 2007 Spectroscopy and Chemometrics in R.

Volume 20, 2007 Psychometrics in R.

Volume 22, 2007 Ecology and Ecological Modelling in R.

Volume 24, 2007 Statistical Modeling of Social Networks with "stnet".

Volume 27, 2008 Econometrics in R.

Volumes 18, 20, 22, and 27 are results of a project started at useR! 2006 in Vienna, where the editorial board decided to create a number of special volumes with the generic title "Foometrics in R". In general, the number of submissions describing R packages (or R code snippets) has been increasing rapidly. The proportion of R submissions now hovers around 70%, with the remaining software written mostly in MATLAB, Stata, Mathematica and SAS. There are currently (in June 2009) 299 articles, 68 book reviews, 13 code snippets, and 4 software reviews in the JSS archives.

VISIBILITY

In 2000 Andreas Buja and Jan de Leeuw, then editors of Journal of Computational and Graphical Statistics (JCGS) and JSS respectively, decided to investigate ways to integrate the two journals. Initially, the proposal was to make JSS the software section of JCGS, in the same way that Applied Statistics, published by the Royal Statistical Society, used to have a software section (until 1995). But when JSS started growing dramatically around 2002 this became impractical. JCGS started publishing abstracts of JSS articles and snippets, and this continues.

It was also decided at the time that JSS would make an effort to become an official ASA journal—this happened in 2006. ASA is the official publisher of the journal and it owns the domain name jstatsoft.org and the ISSN and CODEN numbers. The content of the journal remains freely accessible. Software is under the GPL license, and articles under the CC-BY license (see http://creativecommons.org/about/license/). JSS is an official Open Access Journal (see http://www.doaj.org/).

These days visibility must be promoted by the journal being listed in repositories. JSS is, of course, in the Current Index to Statistics.In addition, JSS is indexed in the Directory of Open Access Journals, the Research Papers in Economics, the Web of Science, and Scopus. Meta-information for harvesting is provided in BibTeX, in RePEc, and in OAI Dublin Core format.

IMPLEMENTATION

JSS is a Ruby-on-Rails application residing on the UCLA Statistics servers. It can be reached at http://www.jstatsoft.org. Initially JSS was a set of scripts for Apache-PHP-MySQL (AMP), but in 2007 the journal was rewritten in Rails by Jose Hales-Garcia of the UCLA Statistics Computing Staff. This made browsing and searching much easier, and it provided an RSS feed at feed://www.jstatsoft.org/rss. The journal application is improved constantly over time. In 2008 an interface for the editorial board will be added, and an interface for the authors and reviewers is in the planning stages.

Since 2008 submissions must be in the JSS LaTeX format, from which the PDF document is produced and published. This does not only guarantee a unified style of the publication but also assures certain quality standards for the PDF like hyperlinks within the document and to the World Wide Web. There are separate templates for book reviews, software reviews, and code snippets. Each JSS volume has a number of issues (each article is an issue), in addition to snippets and reviews. All issues are numbered separately, so there is no cumulative page count for a particular volume.

Whenever a new issue comes out, subscribers to the mailing list jss-announce get notified, while of course subscribers to the RSS feed also get whatever form of notification they have on their local machines.