

Using knitr in org-mode

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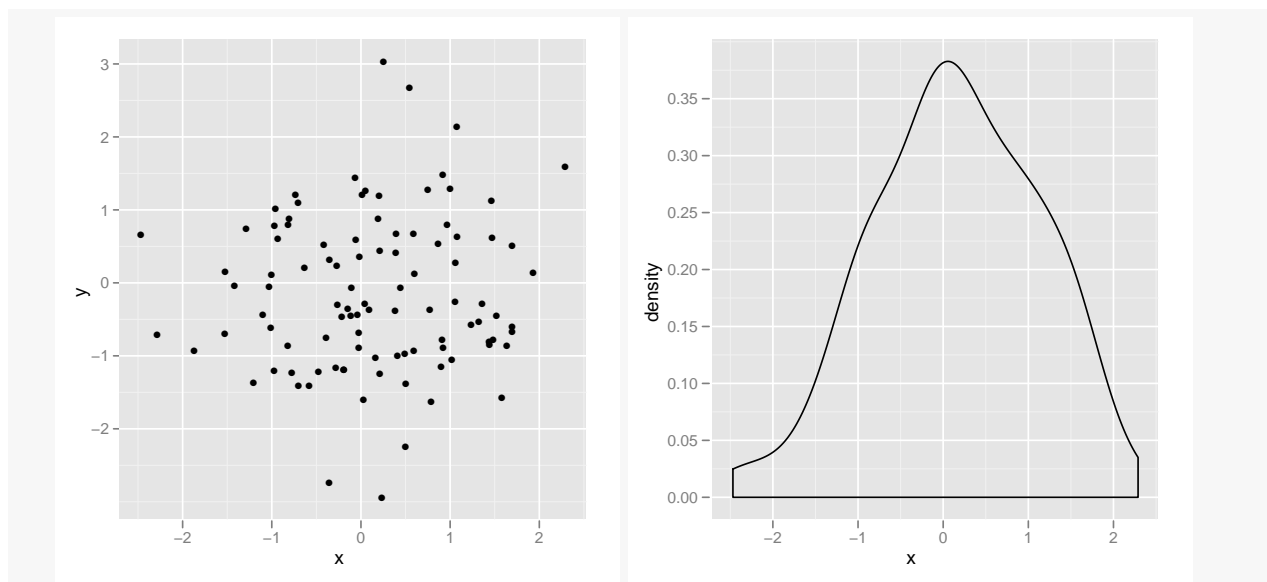
February 1, 2012

Yihui Xie's new **knitr** package for R is awesome. If you're an Emacs org-mode fan and are wondering how to get the knitr package to work under org-mode, then this article shows you how. It's best to look at the source file `knitr_article.org` from which this document was generated.

First we'll generate some data using a traditional org-mode R code block enclosed between `+begin_src` R and `#+end_src`.

```
d <- data.frame(x=rnorm(100), y = rnorm(100) )
```

Then we take advantage of knitr to produce 2 plots side-by-side, using a code-chunk enclosed between `<...>=` and `@`. Note that we need to enclose all such knitr code-chunks between `#+begin_LATEX` and `#+end_LATEX`, to ensure that these are left intact when exporting to LaTeX.



Now to process this `.org` to `.tex` and then to `.pdf`, simply follow these steps:

- As this article shows, in your `.org` file, you can mix traditional org-mode source-code blocks (enclosed between `#+begin_src` R and `#+end_src`) with knitr code chunks, enclosed between `<...>=` and `@`. Note that R results from the traditional org-mode code-blocks can be used in the knitr code-chunks, as the current article itself shows.
- Wherever you need to use a knitr code-chunk, insert that code-chunk between `#+begin_LATEX` and `#+end_LATEX`.
- If there are any special LaTeX header lines you want to use to get nice knitr output, put them at the top of your document preceded by the string `#+latex_header:`

- Now use the standard method to export your .org document to LaTeX to produce a .tex document (either to M-x org-export-latex or use the keyboard short-cut C-c-e l). Note that when you do this, *the knitr code chunks are unaffected*, i.e. passed intact to the .tex document, since they enclosed within `#+begin_LATEX` and `#+end_LATEX`. So your .tex document now looks very much like a .Rnw (noweb) document, i.e. a LaTeX document containing some knitr code-chunks.
- Next, rename your <file>.tex document to <file>.Rnw.
- In your R session, run knitr on the .Rnw file in the usual way, to produce a .tex file in the same directory:

```
> knitr("~/Path/To/file.Rnw")
```

- Finally, run pdflatex on this .tex file to get your pdf file in the usual way.

Sounds like too many steps? Me too. That's why I put together this bit of emacs-lisp code to do *all of these steps in one key-stroke*: Paste the entire emacs-lisp code in the file **org_{knitr}.el** from this repository, into your emacs initialization file (either your ~/.emacs file or your ~/.emacs.d/user/my_init.el file depending on how your emacs is set up). Of course, you need to have ESS (emacs-speaks-statistics) installed in your emacs. Once you load this initialization file into emacs, place the cursor within your .org file, and just hit F5 to do the whole chain of .org->.tex->.Rnw->.tex->.pdf in one step!

(Ok, I lied, I did not write this code entirely from scratch – rather, parts of it were adapted from `ess-swv.el` and the code for doing one-step conversion of .Rnw -> pdf was adapted from a post by Viatlie S. on the `ess-help` mailing-list.)