Using knitr in org-mode

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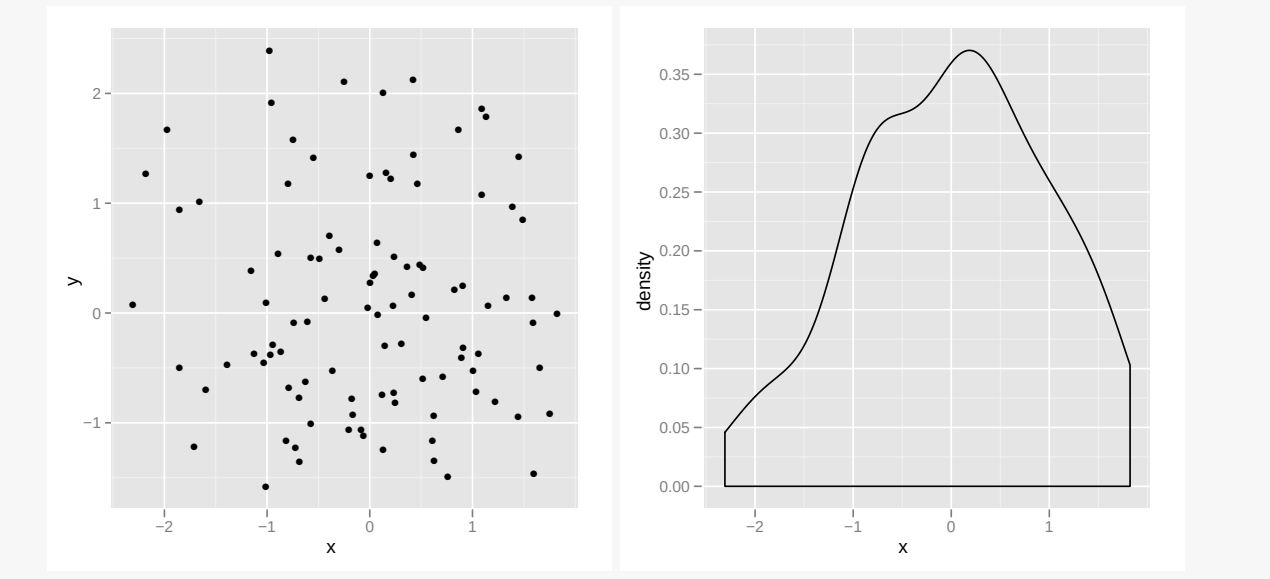
February 1, 2012

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 `knit` on the `.Rnw` file in the usual way, to produce a `.tex` file in the same directory:

```
> knit("~/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! Or, you can bind your own keyboard short-cut to the `ess-knitr-weave` function.

(Ok, I lied, I did not write the `emacs-lisp` 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.)