An example poster using KnitR and LaTeX

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Introduction

- This is an example poster created in LaTeX
- A few LaTeX packages and other pieces of code and software are used to make this all work:
  - The beamer and beamerposter packages are integral to this poster
  - A slightly modified version of the beamerposter theme available from `http://www.nathanieljohnston.com/2009/08/latex-poster-template/` was used to style the visual aspects of the poster
  - KnitR was used to allow the output of R code (text, numbers, and figures) to be included directly in the poster

Motivations

- Why use LaTeX to make a poster? What advantages does it offer over PowerPoint or other alternatives?
  - LaTeX emphasizes a clear separation of content and form, allowing you to focus on the "what" rather than the "how"
  - LaTeX has easy, high-quality math typesetting
  - Bibliography systems like biblatex make managing citations and including them in your poster easy
  - If there's something unique you need to be able to do (like write International Phonetic Alphabet, or draw diagrams), you can likely extend LaTeX through packages to do so
  - KnitR, an R package, allows the results of R code to be included directly in the poster

How it works

- The files
  - `beamerthemconfposter.sty` — contains definitions of the title and blocks, as well as colors and theme options
  - `beamerposter.sty` — provides the beamerposter package
  - `poster.Rnw` — the source file, which is turned into a .tex file by KnitR
- The source file
  - The poster is composed of a title and columns, with each column being subdivided into blocks
  - Blocks contain the content of the poster, and come in two flavors – normal (like the first block, "Introduction") and alert (like the this block, "Motivations")
  - R code is delimited by special characters «» and @

Some examples

KnitR enables us to directly output figures and plots generated in R into the poster. The R source code is stored in `poster.Rnw`, so it's easy to change at any time or return to for later reference. And, there's a variety of options to control the size, scale, and characteristics of your figures. Here's a few examples using the `iris` dataset in R

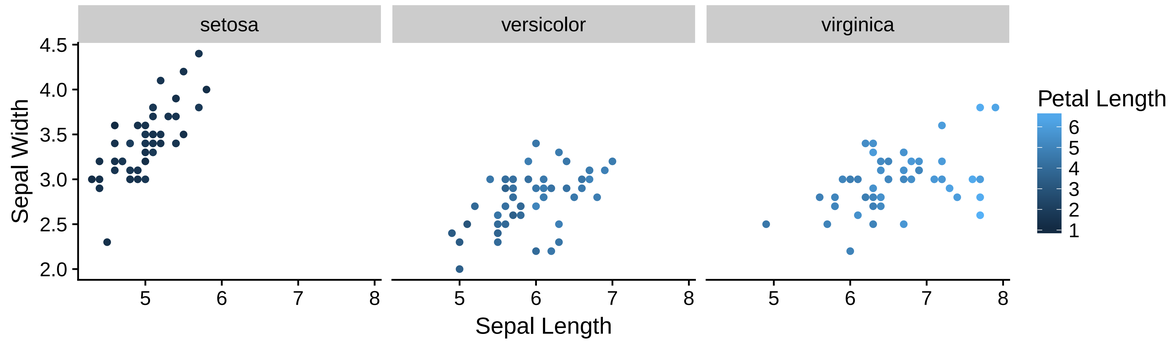

Figure 1: Sepal width versus sepal length, with color indicating petal length. Each panel shows a different species.

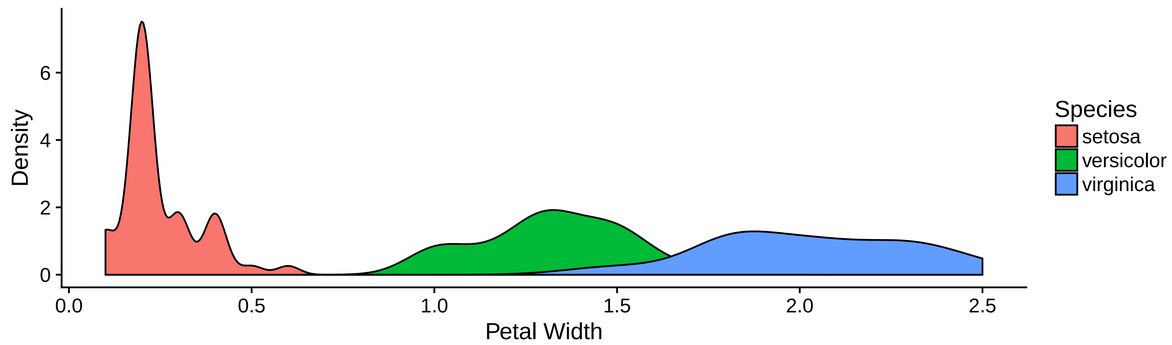

Figure 2: Density plots of petal width, with each species shown in a different color

And here are some more examples using the `diamonds` data set from `ggplot`:

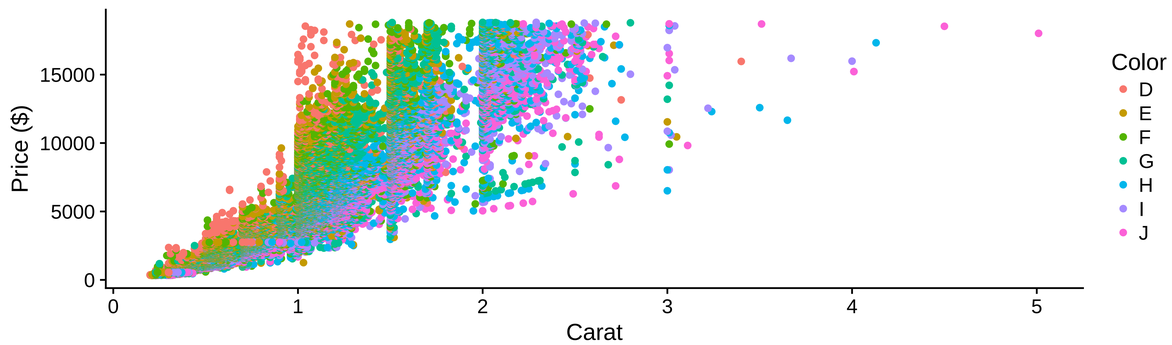

Figure 3: Diamond sale price versus carat (i.e., weight). Dot color indicates different diamond color ratings, from J (worst) to D (best).

Resources

- `http://www.personal.kent.edu/~rmuhamma/Systems/latex.html` — Big collection of LaTeX resources
- `https://yihui.name/knitr/` — overview of KnitR
- `https://yihui.name/knitr/options/` — KnitR options to modify the behavior of R code chunks

An example compilation in Bash

```
cd /where/the/poster/dir/is
Rscript -e "library(knitr);
knitr('./poster.Rnw')"
latexmk -pdf poster.tex
```

More examples of nice things LaTeX can do

- Math typesetting

$$\nabla \mathbf{f} = \frac{\partial \mathbf{f}}{\partial x}\hat{\mathbf{i}} + \frac{\partial \mathbf{f}}{\partial y}\hat{\mathbf{j}} + \frac{\partial \mathbf{f}}{\partial z}\hat{\mathbf{k}} \quad (1)$$

$$f(\zeta) = \int_{-\infty}^{\infty} f(x) e^{-2\pi i x \zeta} dx \quad (2)$$

- Tables

Parameter	Texas	Minnesota
Population (mil.)	27	6
Median income (thou. $)	56	68

- Automated bibliographies
  - You can cite sources inline: Ashmore [1]
  - You can also cite sources parenthetically [3]
  - You can change easily between citation styles with single commands (almost all types are supported)
  - And then you can print out your bibliography:

[1] Jonathon F. Ashmore. "The Electrophysiology of Hair Cells". In: *Annual Review of Physiology* 53 (1991), pp. 465–476.

[2] Anna Dreyer and Bertrand Delgutte. "Phase Locking of Auditory-Nerve Fibers to the Envelopes of High-Frequency Sounds: Implications for Sound Localization". In: *Journal of Neurophysiology* 96 (2006), pp. 2326–2341. DOI: 10.1152/jn.00326.2006.

[3] Shihab Shamma and David Klein. "The case of the missing pitch template: How harmonic templates emerge in the early auditory system". In: *The Journal of the Acoustical Society of America* 2015.5 (2000), pp. 2631–2644.