

# Random L<sup>A</sup>T<sub>E</sub>X presentation using the Beamer class

as a subtitle, L<sup>A</sup>T<sub>E</sub>X definitely rocks

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Bioinformatics Research Group @ ITESM campus Monterrey

May 25, 2013

# Author's presentation

- ▶ Author's data:
  - ▶ Your name
  - ▶ Your academic grade — your school
- ▶ Author's ascriptions:
  - ▶ Your research unit 1 — University 1
  - ▶ Your research unit 2 — University 2





Introduction

Adding images

Citing

Code

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# Introduction

- ▶ This short presentation is intended to show how to make your own presentations using  $\text{\LaTeX}$  with the **Beamer** class
- ▶ As a Master of Science in Computer Science student, I find  $\text{\LaTeX}$  a very useful tool to make my own reports and presentations
- ▶ I think that because I can adapt my presentations (and my reports) to my needs, not the opposite (which tend to happen with programs that does not allow you to modify or even take a look at the *source code*)

# Introduction — L<sup>A</sup>T<sub>E</sub>X installation

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- ▶ I use **Crunchbang Linux** (Waldort 11) as my OS which is **Debian** based (Wheeze 7.0)
- ▶ So, to install L<sup>A</sup>T<sub>E</sub>X in a Debian based distro just open a terminal and type:
  - ▶ `sudo apt-get install texlive-full` # for the whole TeX libs
  - ▶ `sudo apt-get install texlive-base` # for the essential TeX libs



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- ▶ For Windows and MacOS, I have to confess that I do not know how to install  $\text{\LaTeX}$ .
- ▶ But I am aware that there are thousands of related pages to help you up making a quick search in **Google**

# Customizing your slides by using themes for Beamer

- Check this page at <http://www.math.umbc.edu/~rouben/beamer/quickstart-Z-H-30.html> for using different themes for beamer.

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- ▶ Check this page at <http://www.math.umbc.edu/~rouben/beamer/quickstart-Z-H-30.html> for using different themes for beamer.
- ▶ All you need to do, is go to the line that says `usetheme{Dresden}` and replace "Dresden" with "CambridgeUS" for example

# Customizing your slides by changing the color

- ▶ All you need to do, is go to the line that says `usecolortheme[RGB = {70,130,180}]{structure}` and replace the 70, 130, 180 with other color

# How to produce a slide with **itemize** environment

```
% new slide
\frame{
  \frametitle{Introduction}
  \begin{itemize}
    \item <1-> I hope you (as I do) find \LaTeX{} as a cool
               and very useful tool
    \item <2-> For more information, do not forget to take a
               look at \url{http://www.latex-project.org/}
    \item <3-> And at this place
               \url{http://latex.simon04.net/}
               you will find some themes for \texttt{Beamer}
  \end{itemize}
}
```

# Output of the previous slide

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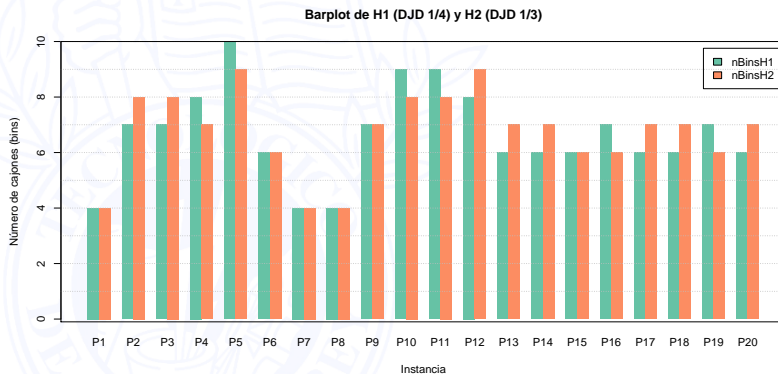
# Output of the previous slide

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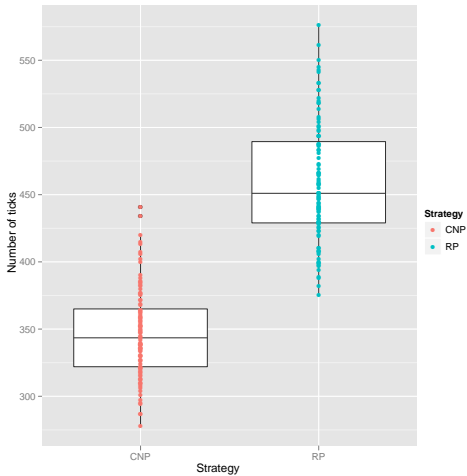
# How to produce a slide with an image

```
% new slide
\frame{
\frametitle{Introduction}
% add images to the slide
% the image is titled "barplotNumberBinsPerHeuristic.pdf"
% note that the ".pdf" is not required
% (unless there exist another image with the same name but
% with different format, such ".png" for example)
% Do not forget to add the full path of the image
\begin{center}
\includegraphics[width=0.8\textwidth]{images/introduction/barplotNumberBinsPerHeuristic}
\end{center}
}
```

# Figure 1 (Output of the previous slide)



## Figure 2



# Additional notes 1

- ▶ Please do not forget to take a look at the source code in order to learn how it works

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- ▶ Please do not forget to take a look at the source code in order to learn how it works
- ▶ I've commented the most and critical parts of **beamerExample.tex** to help in the interpretation of the code

## Additional notes 2

- ▶ Each .tex file is just to show that you can *split* your presentation into **sections**

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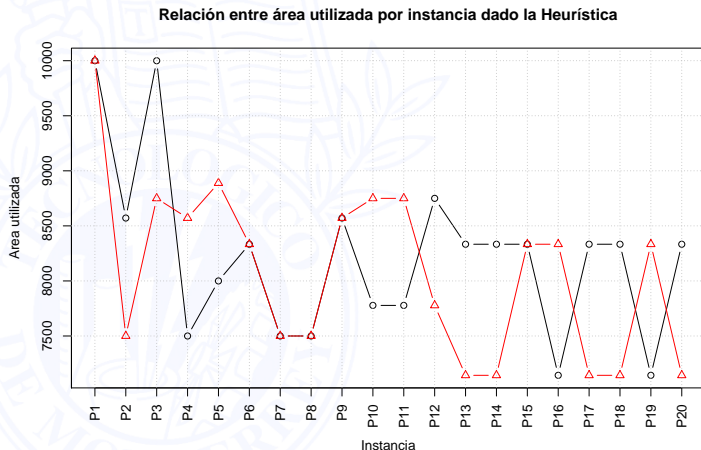
- ▶ Each .tex file is just to show that you can *split* your presentation into **sections**
- ▶ I prefer to work this way because I find it more organized and with less clutter it boost my understanding of the final PDF file without having to compile a lot of intermediary PDF files



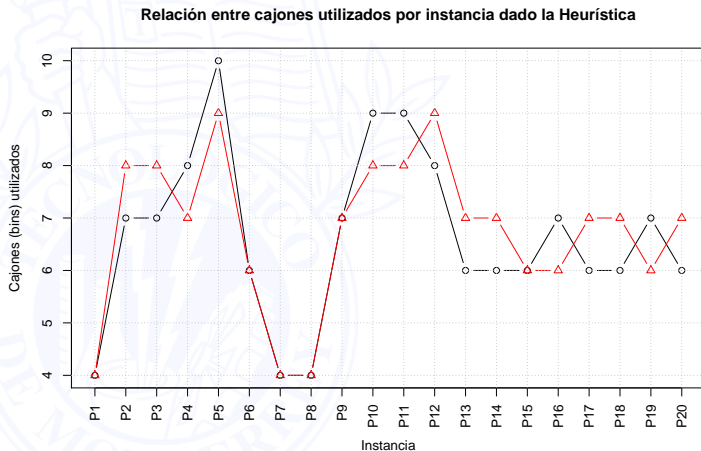
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- ▶ Always comment your code for further references and I suggest to keep managing your **sections** as individual .tex files

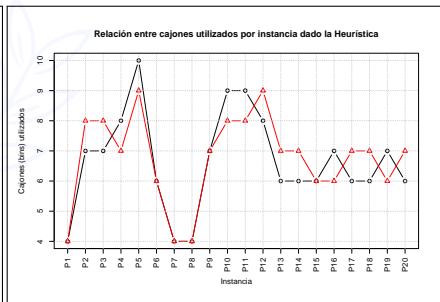
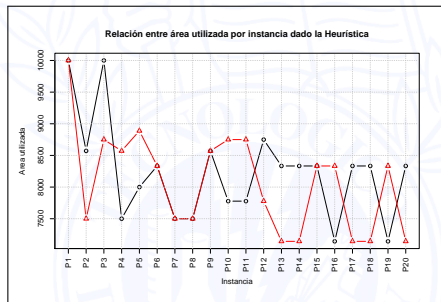
# More examples — Figure 1



## More examples — Figure 2



# More examples — showing two images in the same slide



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- ▶ All the references are placed together in a .bib file



# BibTeX entry format example

```
@Manual{R2012,  
  title      = {R: A Language and Environment  
                for Statistical  
                Computing},  
  author     = {{R Core Team}},  
  organization = {R Foundation for Statistical Computing},  
  address    = {Vienna, Austria},  
  year       = 2012,  
  note       = {{ISBN} 3-900051-07-0},  
  url        = {http://www.R-project.org}  
}
```

# Compile the document

- ▶ Do not forget to compile your  $\text{T}_{\text{E}}\text{X}$  file at least 3 times (I use the **pdf $\text{\LaTeX}$**  command)

# Compile the document

- ▶ Do not forget to compile your  $\text{T}_{\text{E}}\text{X}$  file at least 3 times (I use the **pdflatex** command)
- ▶ The order I compile this PDF is the following after opening a terminal at the current source directory:
  - ▶ `pdflatex beamerExample`
  - ▶ `bibtex beamerExample`
  - ▶ `pdflatex beamerExample`
  - ▶ `pdflatex beamerExample`

# Citing inside the document

```
% new slide
\frame{
\frametitle{Example: Computational tools}
\begin{itemize}
\item <1-> Statistical Computing programming
  language \textbf{R} available
  at \url{http://cran.r-project.org/} \citep{R2012}
\item <2-> \textbf{Bioconductor} R packages
  and tools for the analysis and comprehension
  of high-throughput genomic data available
  at \url{http://www.bioconductor.org/} \citep{Gentleman2004}
\end{itemize}
}
```

## Example: Output of the previous slide

- ▶ Statistical Computing programming language **R** available at <http://cran.r-project.org/> (R Core Team 2012)

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- ▶ Statistical Computing programming language **R** available at <http://cran.r-project.org/> (R Core Team 2012)
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# Code

- ▶ This final section is just to show you how to add **code** and/or **equations** in your presentations

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x <- c(1,14,16,10)
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x <- c(1,14,16,10)
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x <- c("hola","adios","hola de nuevo")
```

```
[1] "hola" "adios" "hola de nuevo"
```

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x <- c(1,14,16,10)
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[1] 1 14 16 10
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```
x <- c("hola","adios","hola de nuevo")
```

```
[1] "hola" "adios" "hola de nuevo"
```

```
x <- c(TRUE,FALSE,TRUE)
```

```
[1] TRUE FALSE TRUE
```

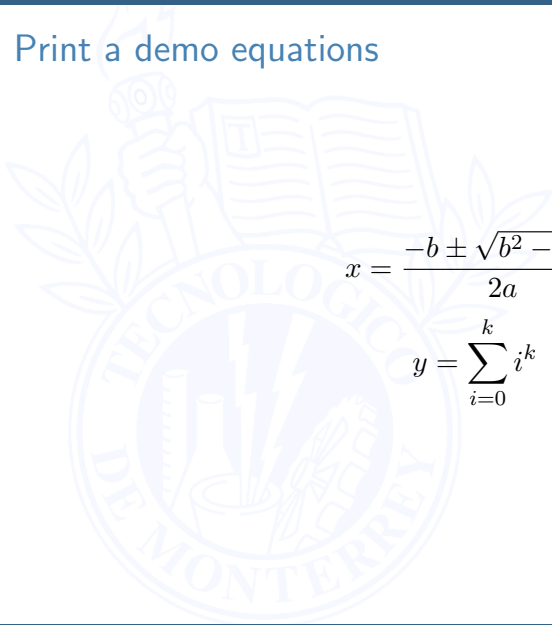
# Print code in LaTeX using verbatim

```
for(i in 1:allGenes){  
  if(expression[i] > threshold){  
    expressed[i] <- gene.id[i]  
  }  
}
```

# Print code in LaTeX using Istlisting

```
1 for(i in 1:allGenes){  
2   if(expression[i] > threshold){  
3     expressed[i] <- gene.id[i]  
4   }  
5 }
```

# Print a demo equations


$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad (1)$$

$$y = \sum_{i=0}^k i^k \quad (2)$$

# References I

Gentleman, R. C., Carey, V. J., Bates, D. M., Bolstad, B., Dettling, M., Dudoit, S., Ellis, B., Gautier, L., Ge, Y., Gentry, J., Hornik, K., Hothorn, T., Huber, W., Iacus, S., Irizarry, R., Leisch, F., Li, C., Maechler, M., Rossini, A. J., Sawitzki, G., Smith, C., Smyth, G., Tierney, L., Yang, J. Y. H., Zhang, J., 2004. Bioconductor: open software development for computational biology and bioinformatics. *Genome Biol* 5 (10), R80.

URL <http://dx.doi.org/10.1186/gb-2004-5-10-r80>

R Core Team, 2012. R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria, ISBN 3-900051-07-0.

URL <http://www.R-project.org>