

Lab Meeting Notes

On Cluster Computing:

<http://www.stat.sfu.ca/~dean/labmtgs/ClusterComputing/ClusterComputing.pdf>

Code used in the above description of cluster computing:

http://www.stat.sfu.ca/~dean/labmtgs/ClusterComputing/cox_mpi.out

http://www.stat.sfu.ca/~dean/labmtgs/ClusterComputing/RMPI_cox.txt

http://www.stat.sfu.ca/~dean/labmtgs/ClusterComputing/RMPI_cox_master.Rout

http://www.stat.sfu.ca/~dean/labmtgs/ClusterComputing/RMPI_cox_slave.Rout

http://www.stat.sfu.ca/~dean/labmtgs/ClusterComputing/RMPI_cox_test.R

Spring 2010: Joint Modeling

<http://www.stat.sfu.ca/~dean/labmtgs/JM/Juarez-On-Berridge-1996.pdf>

<http://www.stat.sfu.ca/~dean/labmtgs/JM/Juarez-On-French-Heagerty-2009.pdf>

<http://www.stat.sfu.ca/~dean/labmtgs/JM/Juarez-On-Herring-Yang-2007.pdf>

<http://www.stat.sfu.ca/~dean/labmtgs/JM/Juarez-On-Schlather-et-al-2004.pdf>

<http://www.stat.sfu.ca/~dean/labmtgs/JM/Thompson-On-Diggle-2008.pdf>

<http://www.stat.sfu.ca/~dean/labmtgs/JM/Thompson-On-Henderson-2000.pdf>

<http://www.stat.sfu.ca/~dean/labmtgs/JM/Thompson-On-Zeng-2005.pdf>

Summer 2010: Visualization

Level Plots:

Here (http://www.stat.sfu.ca/~dean/labmtgs/Vis/CC_levelplot.R) is R code for graphing a levelplot and the corresponding data file (http://www.stat.sfu.ca/~dean/labmtgs/Vis/CC_levelplot_test.csv) in csv format.

Bubbleplot-Caveplot:

<http://www.stat.sfu.ca/~dean/labmtgs/Vis/AGG-bubble-caveplot-histooverlay.R>

Fundamental issues with plotting data and using proper CM font:

http://www.stat.sfu.ca/~dean/labmtgs/Vis/HC_presentation.R

http://www.stat.sfu.ca/~dean/labmtgs/Vis/HC_CMfont_svggraphics.R

http://www.stat.sfu.ca/~dean/labmtgs/Vis/HC_fundamentalissues_plotting.R

Interactive plots:

<http://www.stat.sfu.ca/~dean/labmtgs/Vis/HC-interactivePlots1.R>

<http://www.stat.sfu.ca/~dean/labmtgs/Vis/HC-interactivePlots2.R>

3D graphs:

http://www.stat.sfu.ca/~dean/labmtgs/Vis/HZ_presentation.R

Fall 2010: The Elements of Statistical Learning (Hastie, Tibshirani & Friedman)

<http://www.stat.sfu.ca/~dean/labmtgs/Fall2010/VW-LinearMethodsforClassification-Ch4.pdf>

[http://www.stat.sfu.ca/~dean/labmtgs/Fall2010/HZ-ModelAssessmentandSelection-Ch7\(2\).pdf](http://www.stat.sfu.ca/~dean/labmtgs/Fall2010/HZ-ModelAssessmentandSelection-Ch7(2).pdf)

<http://www.stat.sfu.ca/~dean/labmtgs/Fall2010/RH-BasisExpansionsandRegularization-Ch5.pdf>

<http://www.stat.sfu.ca/~dean/labmtgs/Fall2010/HC-NeuralNetworks-Ch11.R>

[http://www.stat.sfu.ca/~dean/labmtgs/Fall2010/HZ-ModelAssessmentandSelection-Ch7\(1\).pdf](http://www.stat.sfu.ca/~dean/labmtgs/Fall2010/HZ-ModelAssessmentandSelection-Ch7(1).pdf)

Visualization Tools:

Overview list of visualization tools: http://www.sfu.ca/ccirc/vis_tools

Demo: Tableau: <http://www.tableausoftware.com>

Extended license: <http://www.tableausoftware.com/sfu>

Sweave: (http://www.stat.sfu.ca/~dean/labmtgs/Sweave/Sweave_Demo.pdf) a handy way to integrate R or S-Plus code and Latex; a method of what is called “literate statistical analysis”; user manual:

<http://www.stat.uni-muenchen.de/~leisch/Sweave/Sweavemanual.pdf>

What you need: text Editor for .Snw file; contains latex command, Sweave command and R code; R; WinEdt or Texshop; 2 files:

Sweave.sty (<http://www.stat.sfu.ca/~dean/labmtgs/Sweave/Sweave.sty>) and upquote.sty(<http://www.stat.sfu.ca/~dean/labmtgs/Sweave/upquote.sty>)

A typical .Snw file

```
\documentclass{article}
\title{Sweave Example}
\author{Victoria Wan}
\date{\today}
\usepackage{Sweave, graphicx, amsmath, amssymb, fullpage}
\begin{document}
\make title
<<echo=FALSE, results=tex>>=
...
R code
...
@
\setkeys{Gin}{width=5in, height=5in}
\begin{figure}[!ht]
\begin{center}
\includegraphics[scale=0.75]{filename.pdf}
\caption{Caption_for_file}
\label{file}
\end{center}
\end{figure}

\setkeys{Gin}{width=5in, height=5in}
\begin{figure}[!ht]
\begin{center}

$$\begin{array}{cc}$$

<<fig = T, echo = F>>=
plot(density(...))
@ \\
\end{array}
\end{center}
\caption{Caption for density plot}
\label{densityplot}
\end{figure}
```

Bibliography and JabRef:

http://en.wikibooks.org/wiki/LaTeX/Bibliography_Management

<http://amath.colorado.edu/documentation/LaTeX/reference/faq/bibstyles.html#styles>

<http://jabref.sourceforge.net/>

Computing:

Departmental computing information page (<http://www.stat.sfu.ca/research/computing/>)

R Intro: <http://www.stat.sdu.dk/matstat/R/Rintro.htm>

R Tutorial:

<http://dirk.eddelbuettel.com/papers/useR2009hpcTutorial.pdf>

Topics include:

- profiling and tools for visualising profiling output
- gaining speed using vectorisation
- gaining speed using Ra and just-in-time compilation
- how to link R to compiled code using tools like inline and Rcpp
- how to embed R in C++ programs
- running R code in parallel using MPI, nws, snow, ...
- scripting and automation using littler