Wavelet Methods for Time Series Analysis

Don Percival

Applied Physics Laboratory
Box 355640
University of Washington
Seattle, WA 98195–5640

206–543–1368

dbp@apl.washington.edu

http://faculty.washington.edu/dbp

Overview of Short Course: I

- welcome!

- five day course will consist of four sessions each day (two in the morning and two in the afternoon, each about 45 minutes long)

- Monday

  1: introduction to wavelets and wavelet transforms (Part I)

  2: introduction to the discrete wavelet transform (Part II)

  3 & 4: basic theory for discrete wavelet transform (Part III)

- Tuesday

  1 & 2: MODWT & examples of DWT/MODWT analysis (Part IV)

  3: wavelet packet transforms and best bases (Part V)

  4: R software demonstration

Overview of Short Course: II

- Wednesday

  1: matching pursuit (Part VI)

  2 & 3: wavelet variance and covariance (Part VII)

  4: R software demonstration

- Thursday

  1 & 2: analysis & synthesis of long memory processes (Part VIII)

  3: wavelet-based bootstrapping (Part IX)

  4: wavelet-based signal extraction and denoising (Part X)

- Friday

  1 & 2: wavelet-based signal extraction and denoising (conclusion)

  3: R software demonstration

  4: continuous wavelet transforms (Part XI)

Resources

- lectures notes bases upon *Wavelet Methods for Data Analysis*, D. B. Percival and A. T. Walden, Cambridge University Press, Cambridge, UK, 2000

- software in Matlab:

  WMTSA: http://www.atmos.washington.edu/~wmtsa   (*)

  WaveCov: http://www.image.ucar.edu/staff/whitcher/software/   (*)

  wavelab: http://www-stat.stanford.edu/~wavelab/

- software in S-Plus: S+Wavelets 2.0 (commercial)   (*)

- software in R

  wavethresh: http://cran.r-project.org

  wavelets: http://cran.r-project.org   (*)
  (this and wavethresh available via 'Packages' sidebar item under 'Software')

  WaveCov: http://www.image.ucar.edu/staff/whitcher/software/   (*)

  waveslim: http://www.image.ucar.edu/staff/whitcher/software/   (*)

- note: if any of these links break, go to

  http://faculty.washington.edu/~dbp/WMTSA/software.html

  or e-mail Don Percival (dbp@apl.washington.edu) to get new link

(*) indicates software compatible with conventions used in course notes and book