Applied Nonparametrics STA 4502/5507

Yiyuan She

Department of Statistics, Florida State University

Fall 2009

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- Yiyuan She, OSB 214F
- Office hour: Tuesday 12:30-1:30
- TA: Jianhang Lin, OSB 209H Office hour: Thursday 2:00-3:00pm

- http://campus.fsu.edu
- Syllabus
- Announcements
- Slides
- Exam information
- Grades

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- Final: December 9, 12:30-2:30pm
- Midterm 1: October
- Midterm 2: November

- Not collected
- Reinforces lecture and examples
- Prepares you for exams

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- R
- Add-on packages
- S-Plus, Matlab, and others are OK, but I will use R
- Book: Minitab and StatXact
- Knowledge of R is not necessary for course

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- Nonparametric Statistical Methods
- Hollander & Wolfe
- Second edition
- Required

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Should know

- Normal, binomial, median, mean, variance
- Hypothesis tests, p-values, critical values
- Power and significance
- Basic probability
- Independence
- Central Limit Theorem (CLT)
- Regression (Ordinary Least Squares)

- Deadline: 4pm on December 4, 2009
- Paper: typed, 5-12 pages
- Data: professional journal (non-statistics)

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- Midterm 1: 20
- Midterm 2: 20
- Final: 30
- Project: 30

Check the syllabus online.

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- Assume $X_1, \cdots, X_n \sim N(\mu, \sigma^2)$
- $H_0: \mu = 0$
- If σ is known, use z-test: $Z = \sqrt{n}\bar{X}/\sigma$ which follows N(0,1) under H_0
- If σ is unknown, use *t*-test: $T = \frac{\sqrt{n}\bar{X}}{S}$ which follows t_{n-1} under H_0 , where $S^2 = \sum (X_i \bar{X})^2 / (n-1)$

- Nonparametric models differ from parametric models in that the model structure is not specified
- Sometimes called distribution free
- We may still be interested in centers and scales, but we no longer impose the restrictions of a specific distribution onto the data or population

- Few assumptions made about populations
- Slightly less efficient than parametric methods when problem is correctly parameterized, but can be much better when parametrization is wrong
- Robust to outliers
- Applicable in many situations when parametric procedures inapplicable

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- http://cran.r-project.org
- Many useful resources
- Manuals
- Packages

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	Download R 2.9.2 for Windows (34 megabytes) Installation and other instructions New features in this version: <u>Windows specific</u> , <u>all platforms</u> .		
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tware Sources Binaries	Please see the <u>R_FAQ</u> for general information about R and the <u>R_Windows FAQ</u> for Window specific information.	ws-	
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cumentation	 Patches to this release are incorporated in the <u>r-patched snapshot build</u>. A build of the development version (which will eventually become the next major relea available in the <u>r-devel snapshot build</u>. 	se of R) is

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