

UCLA

Statistics Newsletters

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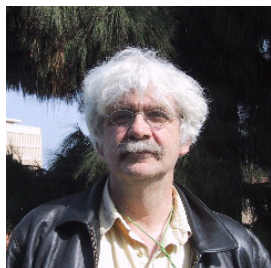
Statistical Moments

Newsletter of the Department of Statistics at UCLA

Volume 2 Number 1, Spring/Summer 2003

Greetings from the Chair

Jan de Leeuw



Much of the winter quarter is taken up by the admission process. We look at well over a hundred applications, sort them in piles, and make decisions. This year, we admitted 12 new PhD students and 24 new MS students. The MS applica-

tion/admission process continues throughout the year, so those numbers will change. From the PhD admissions, we have 4 accepts, 4 rejects, and 4 as yet undecided (the deadline is April 15). We have 8 MS accepts so far. This year we offered a Chancellor's fellowship, a Cota Robles fellowship, and a Pauley fellowship to the Ph.D. students, as well as a Graduate Opportunity Fellowship to an MS student. We got \$18K supplementary allocation, for continuing students, from the graduate division (travel support \$5K, retainment stipends \$6K, research stipends \$7.5K). In addition we have the Paul Hoel fund for support of continuing students, and all this taken together means we have somewhat more financial flexibility than in previous years. Up to 11 graduate students will finish this year.

An MS student can decide to go on to the PhD program after finishing. This means filing a new application

and competing with other PhD applications in the pool. Admission is by no means guaranteed, and we typically do not provide tuition and fees to MS students transferring to the PhD program.

The main event in the spring quarter is the qualifying exam. Because the rules have changed over the last four years, I should perhaps repeat them again. At the end of spring quarter, after the quals, all faculty of the department meet to talk about all graduate students. The basic decision is to find out if the student is on schedule or not, and if the student needs additional advance and/or guidance. Students who are not on track are in danger of losing their support. The decision is taken on the basis of the complete file of the student, and on the basis of the experience of the faculty with the student. On track is defined, roughly, by qualifying exam at the end of year one and advancement at the end of year two. The department strongly recommends that every student takes the quals at the end of year one, but passing the qualifying exam is no longer a requirement for advancing to candidacy, or for being on track at the end of the first year. Of course if the qualifying exam, with a satisfactory score, is not in the student's file, then there should be sufficient other materials to make up for that (published papers, grants, research proposals, letters of support). As a consequence of this, the qualifying exam will no longer be graded as pass/fail, students will get a numerical grade. Master's students typically do

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not take the qualifying exam but write a Masters thesis. Of course MS students can take the qualifying exam if they want to, for instance if they have the intention to go on to the PhD, but they can only get the MS degree by writing a thesis. And, of course, if the rules were different when you started your degree program, you can choose to follow the old rules or the new rules.

Finally, there are some nice rewards and initiatives. Roger Peng won the Charles E. and Sue K. Young Grad-

uate Student Award this year. Steve Erickson received the UCLA Genomic Analysis Training Grant. Katherine Tranbarger will teach ten-week a lower division seminar GE course "Making sense of lies, damned lies, and statistics" for the Collegium of University Teaching Fellows next year. Juana Sanchez teaches our first Fiat Lux freshman seminar this spring on "Playing with Chance". There are quite a few more Fiat Lux seminars planned for next year.

New Faculty Member Profiles

Frauke Kreuter



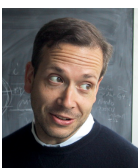
Frauke Kreuter received her "Diplom" (M.A.) in Sociology, with an emphasis on Statistics and Philosophy of Science, at the University of Mannheim, Germany. She then moved to Konstanz to study under Prof. Rainer Schnell, with

whom she worked on sampling and non-sampling errors in complex surveys. In 2001 she finished her doctorate and took a post-doc at UCLA's famed Statistics Department.

Excited with the range of interests of her Californian colleagues, the Department's teaching philosophy, and an outstanding going-away party at Buca di Beppo, she decided to take an extended leave from her "Habilitation" position in Germany to return to UCLA in fall 2002, as an adjunct assistant professor.

Frauke Kreuter's interest in survey methodology spans three areas, namely 1) design effects and cost-efficient survey designs, 2) process-induced nonresponse, and 3) the quality of measurement instruments. She wrote her dissertation on the measurement of fear of crime (if you want, you can read the book, "Kriminaltaetsfurcht: Messung und methodische Probleme", whose publication was financed by the German National Science Foundation). She also co-authored (along with Ulrich Kohler, recently of the WZB, Social Science Research Center Berlin) a German textbook on Stata ("Datenanalyse mit Stata"), which will be published in English by Stata Press later this year.

Mark Hansen



I hold a B.S. in applied mathematics from U.C. Davis and M.A. and Ph.D. degrees in statistics from U.C. Berkeley. For the past 9 years, I served as a Member of the Technical Staff in the Statistics Research Department of Bell Laboratories

in Murray Hill, NJ.

Basically, I study methods for uncovering and expressing important features in large, complex data sets. My work is heavily interdisciplinary, drawing inspiration from numerical analysis, signal processing, information theory, and recently, media arts. I tend to do a fair bit of computing, although perhaps I use too much Perl for my own good! I have published on spline and wavelet methods, minimum description length and model selection, and user-level models characterizing web browsing and searching activity. In the last two years I have also been developing novel methods for representing complex streams of text data. In collaboration with Ben Rubin (EAR Studio, NYC), I have designed multi-media displays that organize these streams for presentation to the general public (a simultaneously exciting and frightening prospect). One byproduct of this interaction has been *Listening Post*, an installation for the Whitney Museum of American Art in New York City. We are also designing a large text display for the new Moscone Center in San Francisco that will be based on a data feed from Google.

In addition to the traditional statistical outlets (like the Interface meetings and the JSM), I've given invited presentations about my work for the National Academy of Sciences' Committee on Information Technology and Creativity; and recently at a meeting on massive data streams organized by the National Academy of Sciences' Committee of Applied and Theoretical Statistics. I have also been invited to participate in meetings that encourage cross-disciplinary collaboration, including the second BRIDGES Consortium at the Banff New Media Institute; and both BLUR Workshops ("New Creative Practices within Developing Technologies," and "Power and Play in Digital Art and Culture") sponsored by the Rockefeller Foundation.

Given the interdisciplinary nature of my research, I try to promote the idea of collaboration. As an example, I was one of the principal organizers of a two-week workshop held at the Mathematical Sciences Research

Institute in March of 2001. The meeting brought together researchers from statistics, artificial intelligence, machine learning, signal processing, information theory, cognitive science and social science. (Proceedings have just been published by Springer-Verlag.) A follow-up meeting of sorts is planned this summer at DIMACS. I was also one of the main organizers of a workshop on the future of statistical computing and graphics within academia. The meeting examined encouraging and rewarding collaboration, with an emphasis on issues related to the creation, support and distribution of statistical

software and analysis tools.

I'm very excited about joining the faculty at UCLA. I'll be surrounded by top-notch colleagues and collaborators in a wide range of disciplines, and will have access to a large number of new and challenging applications. I am also looking forward to interacting with students, a component of academic life that I was lacking at Bell Labs. I should arrive in LA sometime in April. Until then, I've put up a web page on the department site, <http://www.stat.ucla.edu/cocteau>, and can be reached via email at cocteau@stat.ucla.edu.

Student News

Stephen Erickson awarded GATG



PhD candidate Stephen Erickson was recently awarded a UCLA Genomic Analysis Training Grant (GATG) for the 2003-2004 academic year. The brand-new GATG program is funded

by the NIH and seeks to insure that students interested in genomics obtain an adequate biological, computational, and statistical foundation. The program provides for tuition, fees, and a living stipend, and also requires that students take at least one course per quarter from a wide-ranging syllabus.

Genomics is a relatively new, interdisciplinary field that can be defined as the study of the structure and function of large numbers of genes, necessitated by the rapid accumulation of genome sequence data through large-scale initiatives such as the Human Genome Project. Stephen has been researching the application of hierarchical Bayes models to gene expression array data under the supervision of his advisor, Chiara Sabatti, and plans on extending this research under the GATG. More information on the grant can be found at <http://www.genetics.ucla.edu/GATG/>.

As if that weren't enough cause for celebration, this past February Stephen wed recent graduate of the department Heather Ladd. Congratulations Stephen and Heather!

Roger Peng wins Charles E. and Sue K. Young Award

Roger Peng was chosen as one of three graduate student recipients for the 2002-2003 Charles E. and Sue K.

Young Award presented by the UCLA College of Letters and Sciences. He is the first Statistics graduate student to receive this award [I think that's true but not 100% sure]. The award is given to UCLA undergraduate and graduate students who exhibit outstanding scholarship, teaching, and university citizenship. Roger's dissertation focuses on applications of modern multi-dimensional point process methodology to wildfire hazard assessment. He has been researching the effectiveness of a commonly-used numerical hazard index at predicting wildfire occurrence in Los Angeles County. Roger intends to graduate in the Spring of 2003. In August he will be a post-doctoral researcher in the Department of Biostatistics at Johns Hopkins University. Another accomplishment Roger is particularly proud of it that he once watched the entire first season of Dawson's Creek in a single day.

Katherine Tranbarger Selected as Collegium of University Teaching Fellow

Second-year PhD student Katherine Tranbarger was recently accepted into the Office of Instructional Development's Collegium of University Teaching Fellows program. In this program, she will be teaching a self-designed five-unit seminar course next Winter titled "Making sense of lies, damned lies, and statistics". The lower-division seminar for undergraduates will be approved for general education credit shortly, making it the first general education course to be offered by the department. Information on OID's CUTF program can be found online at <http://www.oid.ucla.edu/cutf>. The good news of her accepted application to the program was especially well timed as it cheered her up the week her annual pass to Disneyland expired.

Staff News

Everything's Coming Up Babies

Jennifer Ono, the Department's Fund Analyst, is the latest Departmental Staff member to have a child. her son,

Kaleb , was born on April 8. Kaleb is the fifth child born to one of the seven full-time staff members in our Department in the last year and a half. We congratulate Jennifer and Robert on the newest addition to the family.

Department News

New Courses Introduced

UCLA's Department of Statistics continues to grow. With more students, more students taking classes in our Department and in anticipation of a new Undergraduate major, we have been adding classes to cover a variety of areas in Statistics. Below are the new courses that have been or will be taught in 2003.

Undergraduate Courses:

- Stat C126* Resampling Methods taught by Dr. Coen Bernaards in Spring 2003
- Stat 130C* Introduction to Computational Statistics With R taught by Dr. Frauke Kreuter in Fall 2003
- Stat 153* Statistical Analysis with Missing Data taught by Dr. Coen Bernaards in Spring 2003

Graduate Courses:

- Stat C226* Resampling Methods taught by Dr. Coen Bernaards in Spring 2003
- Stat 231* Pattern Recognition and Machine Learning taught by Dr. Alan Yuille and Dr. Songchun Zhu in Winter 2003
- Stat 232A* Statistical Modeling and Learning in Vision and Science taught by Dr. Songchun Zhu in Spring 2003
- Stat 232B* Statistical Computing and Inference in Vision and Image Science taught by Dr. Songchun Zhu in Fall 2003
- Stat 291* Statistical Consulting Seminar taught by Dr. Mahtash Esfandiari and Dr. Vivian Lew in Spring 2003
- Fiat Lux* Class taught by Department of Statistics

At UCLA, one-unit Fiat Lux seminar courses were created in Fall 2002 to "illuminate the many paths of discovery" that are explored. Fiat Lux is the University of California motto meaning "Let there be light." In Spring 2003, one of the Statistics instructors, Dr. Juana Sanchez, teaches a Fiat Lux seminar on "Playing With Chance". This seminar consists of playing games of chance (widely understood) with computers in a lab. We can't predict for sure the outcome of many things but in many cases we can predict how often some outcomes may happen. Probability theory is a field that teaches us how to make those predictions.

The enrollment for this seminar has already reached its capacity. We know that this course will enlighten those students taking it.

Applications

The Department of Statistics received 124 applications for Fall 2003, 69 for the doctorate program and 55 for the Masters program. Of these, 38 applicants were offered admission to our graduate programs with 20 students accepting our offer (13 Masters and 7 Doctorate).

Three incoming students will receive prestigious multi-year University Fellowships. Doctorate student Xuelian Wei from Peking University is our Chancellors Fellowship recipient, Doctorate student Ziqiang Liu from Zhejiang University is our Pauley Fellowship Recipient, and Masters student Kimberly Duke from Barnard College is our Graduate Opportunity Fellowship Program (GOFP) award recipient. This is the first multi-year fellowship won by one of our Masters students.

Congratulations to all our incoming students. We look forward to seeing you this Fall.

Research

Statistics Research Centers

There are currently three major research centers in the department of statistics at UCLA. Investigators and students working in the Center for Image and Vision Science, Center for the Teaching of Statistics, and the Center for Statistical Computing are involved in a variety of projects ranging from computer vision to managing complex high-dimensional data and statistics education.

1. Center for Image and Vision Science (CIVS) The group of researchers in the CIVS develops and tests

novel statistical and computational methodologies for understanding visual perception and learning. CIVS co-directors are Prof. Song Chun Zhu and Prof. Alan Yuille.

2. Center for the Teaching of Statistics conducts research on projects related to statistics education at all levels - from K12 to graduate education. Director: Prof. Robert Gould

3. Center for Statistical Computing is a new research initiative for methodological and software developments addressing computationally intensive statistical problems. Director: Prof. Mark Hansen.

Recent Publications

Preprints, Papers & Reviews

Orthomax Rotation

Coen Benaards and Bob Jennrich had an article accepted in Psychometrika on orthomax rotation and perfect simple structure. The authors prove that, if a perfect simple structure exists, any orthomax criterion is maximized by it; and vice versa, if a perfect simple structure exists, then it is also the only maximum of an orthomax criterion.

Stochastic Games

Tom Ferguson published an article on "Stochastic Game with Information Structure" with Lloyd Shapley and Robert Weber, Intl. J. Game Theory, 31 (2002). The authors study two-person zero-sum games with stochastic movement among subgames in which the subgame being played is not precisely known, but partially information may be obtained by studying the players choices, the actual game being played and chance itself.

Visual Learning

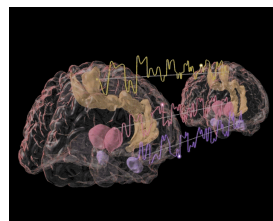
Ying-Nian Wu, C. Guo and S.C. Zhu Published a paper (2002) on "Visual Learning by Integrating Descriptive and Generative Models" in the International Journal of Computer Vision in 2002. In this work the authors construct a hierarchical model of texton patterns useful in statistically analyzing natural images. This multi-level model is a mixture of descriptive and generative methods and provide an efficient approach for computational modeling sophisticated visual patterns.

GLM Selection Criteria

In 2003, Mark Hansen and Bin Yu published a manuscript on "Minimum description length model selection criteria for generalized linear models", Science and Statistics. These investigators derive model selection criteria for generalized linear models (GLMs) using the principle of Minimum Description Length. Mixtures of Normal and double exponential are used to characterize various GLMs.

Wavelet Coefficients of MRIs

Ivo D. Dinov and John Boscardin (Biostat) are completing a study on the distribution of the wavelet coefficients of 578 functional Magnetic Resonance Imaging (fMRI) 4D volumes of normal control subjects. The empirically



obtained heavy-tail distribution model is very important in the analysis of fMRI data for locational and temporal. These findings will be used for identifying the stereotactic locations of statistically significant anatomical differences between normal elderly subjects and dementia patients.

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Graph Partitioning

Stochastic Graph Partition: Generalizing Swendsen-Wang Method A. Barbu and S.C. Zhu, use a graph partitioning scheme to obtain new ways of segmenting and grouping data, as well as. The same approach is also applicable for automatic extraction of features of interest in an image. This paper will appear in IEEE Trans. on Pattern Analysis and Machine Intelligence.

Teaching with Technology

by Rob Gould

In the interests of disseminating information that I hope will be of interest to more than the Center for Teaching Statistics affiliates, I'd like to offer a regular column in this newsletter addressing recent developments concerning the use and abuse of technology in teaching. This first installment will update you on our plans and accomplishments for the two undergraduate computing labs.

The computer labs were funded, in part, by an NSF grant and are intended to provide a method through which undergraduates can study the application of statistics and data analysis. The first lab is in Boelter 9413 (The Instructional Computing Lab) and is designed as a classroom. The second lab, in Hershey 1120, is called the Statistics Learning Resource Center and is intended for "drop in" use. Hours and locations for both labs can be found on the department web page: <http://www.stat.ucla.edu/computing/labs>.

The Instructional Computing Lab is equipped with fairly sophisticated networking features. For example, from the Instructor's Computer, the instructor can disable any other machine in the lab, view the contents of any computer, and display the contents of any computer on the data projector screen. In addition to displaying the instructor's screen via the data projector, this screen can also be displayed on any or all of the machines in the room, which not only prevents the students from getting stiff necks, but also can be used to prevent annoying student activities, such as playing games or checking email while you're trying to talk to them. In the near future,

the Instructional Computing Lab will be equipped with Mimeo, which is a hardware/software device that records marks made on the whiteboard. These recordings can either be displayed on individual screens, or saved for later viewing. With a little tinkering, this can also be used to turn the whiteboard into a "smart board", in which one can interact with the Instructor's computer by making marks on the board. Or at least that is our hope. But at the very least, we will be able to "save" presentations made on the whiteboard so that students can review them at their leisure. For example, you might write out a proof, or demonstrate solving a homework problem, record this, and then include it on your web page for later viewing. The Learning Resource Center is intended to be a place where undergraduate students can go to work on homework and lab assignments. Eventually we hope to equip it with a variety of student resources, such as educational applets, texts, magazines, etc. My hope is that, once we've established a major, the Learning Resource Center will provide a collegial meeting place for students to discuss their work, help each other, and get assistance from the resources we provide. Please let me know if there are any resources that you think would be helpful for your undergraduate students.

If you would like to teach a class in the Instructional Computing Lab, or if you'd like to learn how to use the networking features, please contact Jose. Katherine Tranbarger, our Technology Teaching Assistant Coordinator, is another excellent guide for assistance in using the lab effectively, and can also help your TAs make the best use of the lab.

Bits & Bytes

Computing News, Information and Tips

Welcome to the Spring/Summer 2003 edition of our computing section. This time you find us in the midst of a great migration—new servers running Mac OS X will soon be hosting all of our department's web and e-mail services and a project that was begun a year ago will be completed. All of this is happening at a time of great growth in our department, many changes on our campus, and the expansion of established services and projects. So without further delay here are this issue's Bits & Bytes...

Statistical Moments

Searchable Documents Continue to Come On-line

We have been busy converting our web site into searchable database driven documents. So far we have Preprints, the Library Collection, Theses and Dissertations, Software, Seminars, the Newsletter, Directory, and Support pages on line.

Soon you will be seeing News Items and Datasets added to the list.

The Web in Transition

Web service standards and the technologies implementing them are rapidly emerging. Web services add capabilities to our web applications—**discovery** so 'web service

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directories' can list our applications, **description** so that others can embed our applications into theirs, **packaging** so that system barriers are no longer a concern to the programmer.

A natural fit are our calculators and XML-RPC. By XML-RPC enabling our calculators teachers and students can discover them from a menu of on-line teaching tools which would be published by departments on (or off) campus.

RSS (Rich Site Summary) will summarize our department's content to an increasingly RSS aware world wide web.

CSS and XHTML combined will modularize the look-and-feel of our web pages making it easier for people with diverse tastes to maintain their web pages with a common set of tools. The system we are developing for ourselves will be used in the CMS (Course Management System) project currently underway at the university.

New Centers Affiliated with our Department

Modular look-and-feel is just one way of saying that we have been busy creating web sites for all of our new centers. These can be seen listed at <http://www.stat.ucla.edu/centers>. They include: Center for Environmental Statistics, Center for Image and Vision Science, Center for Statistical Computing, Center for the Teaching of Statistics, Laboratory of Statistical Genomics, Statistical Consulting Center, and Studio of Bio-data Refining and Dimension Reduction.

eScholarship Repository

We are in the process expanding our papers circulation through the eScholarship Repository¹.

The repository's mission statement is:

"The eScholarship Repository offers faculty a central location for depositing any research or scholarly output

deemed appropriate by their participating University of California research unit, center, or department, including working papers and pre-publication scholarship. This is a service of the eScholarship initiative of the California Digital Library. For more information, see About the Repository, Joining the Repository, and Submitting a Paper to the Repository"¹

Please check this valuable site in the near future to see our additions.

Mac OS X Seminars Being Planned

A seminar series is being planned by UCLA's "alpha geeks"² for "alpha geeks".

Some of the planned topics include: clustering experiences, real-time large-sized data management, building site servers, and installing Darwin on X86.

For further updates on these and other computing related events please visit our lists site³ and subscribe to either the StatCompute or the OSXForum mailing lists. We will keep you posted.

UCLA LDAP Access with the Address Book

Did you know that the Address Book and Mail applications work in tandem together to give you greater access to on-line information? You can set up the Address Book to look up university directory information, then the Mail application will use this information to auto-complete any university e-mail address as you type it.

To set up the UCLA LDAP service in the Address Book do the following: 1) Select the "Address Book → Preferences. . ." menu item 2) Click on the "LDAP" tab 3) Click on the "Add" button 4) Fill out the information in the drop down sheet as follows: Name: UCLA Directory Server: Idap.ucla.edu Search Base: <blank> Port: 389 Scope: Subtree 5) Click on the "Save" button

¹<http://repositories.cdlib.org/escholarship/>

²http://www.macdevcenter.com/pub/a/mac/2002/05/14/oreilly_wwdc_keynote.html

³<http://lists.stat.ucla.edu/mailman/listinfo>

Calendar

Events in the Department

Important Upcoming Dates

March 31	Spring Courses Begin
May 26	Memorial Day Holiday
May 31	Ph.D. Qualifying Exam
June 9- 13	Finals Week
June 14	Statistics End-of-The-Year Celebration/Commencement
June 23	Summer Session A Begins
July 4	Independence Day Holiday
August 4	Summer Session C Begins

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