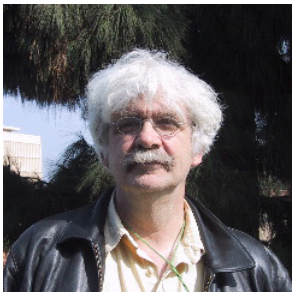
Statistics UCLA

Statistical Moments

Newsletter of the Department of Statistics at UCLA Volume 1 Number 2, Fall 2002/Winter 2003

Greetings from the Chair

Jan de Leeuw



The second issue of the newsletter is electronic. This is less expensive, and it allows us to use color and images much more freely. We also have no restrictions on length, so if you want to contribute something to one of our sections, feel free to do so. And we have a much quicker turnaround.

As you will see from this issue, UCLA Statistics is still enjoying a robust growth. We have two new faculty, and offers outstanding to two more. We have almost twenty new graduate students, bringing our total close to fifty. Preparations for the undergraduate major proposal are in the final stages, and new courses are being added to our roster all the time. After the dramatic growth since 1998 enrollment in our undergraduate courses is stabilizing, but of course enrollment in the graduate courses is increasing. To pomote efficiency, we are are introducing more and more courses as mixed graduate/undergraduate courses, and we are listing a large menu of small seminar courses as well.

We acquired some new space in Engineering I. It is used for the Computer Vision Lab and the research groups of Songchun Zhu and Alan Yuille, and for the research group of Ker-Chau Li. They have to work hard, because the building will be torn down in about a year.

Otherwise, lots of healthy and normal activity. Students leave, staff is replaced, babies are born, grants come in, computers are upgraded, dissertations are written. Read more in the next newsletter, hopefully sometime in February.

In this issue:

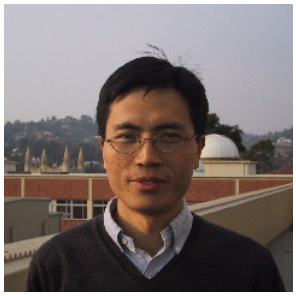
New Faculty Member Profiles

Alan Yuille

Alan Yuille received his BA in Mathematics at the University of Cambridge in 1976. He completed his PhD in Theoretical Physics at Cambridge in 1980 and worked as a postdoc in Physics at the University of Texas at Austin and the Institute for Theoretical Physics at Santa Barbara. From 1982-86 he worked at the Artificial Intelligence Laboratory at MIT before joining the Division of Applied Sciences at Harvard from 1986-1995 rising to the rank of Associate Professor. From 1995-2002 he worked as a senior scientist at the Smith-Kettlewell Eye Research Institute in San Francisco. In 2002, he became a Full Professor at the University of California at Los Angeles.

His research interests are in mathematical modelling of artificial and biological vision. He has over one hundred peer-reviewed publications in vision, neural networks, and physics. He has co-authored two books – Data Fusion for Sensory Information Processing Systems J.J. Clark and A.L. Yuille, and Two- and Three- Dimensional Patterns of the Face P.W. Hallinan, G.G. Gordon, A.L. Yuille, P.J. Giblin and D.B. Mumford – and edited a book Active Vision with A. Blake.

Song-Chun Zhu



Dr. Song-Chun Zhu received his B.S. from the University of Science and Technology of China in 1991. He went to Harvard University in 1992 and studied under Dr. David Mumford - a Fields medalist, where he received his M.S. and Ph.D in 1994 and 1996, respectively. In 1996-97 he was a postdoc at the Division of Applied Math at Brown University, working on pattern theory with Drs. Mumford, Grenander, S. Geman and others. He was a lecturer in the Department of Computer Science at Stanford University in 1997-98. Then in 1998 Dr. Zhu was appointed as an assistant professor in Computer Science and Cognitive Science at Ohio State University. In the Fall of 2001 Dr. Zhu was appointed as an associate professor at UCLA (jointly in Statistics and Computer Science), where he began working in July 2002.

Dr. Zhu co-directs the Center for Image and Vision Science at UCLA together with Dr. Alan Yuille (also a Statistics faculty member). Dr. Zhu's research is focused on computer vision with emphasis on statistical modeling and learning, stochastic computing and inference. His research in vision spans three dimensions: 1) Studying the mathematical mechanisms underlying human visual perception; 2) Building highly intelligent machine vision systems for understanding the contents of images and; 3) Applying these models and systems for applications, such as detection/recognition, image coding, security monitoring, assisting the visually impaired and blind population, and computer arts.

He has published over 50 papers in various journals and conferences. In the past few years, his work received a number of honors, including a Sloan Fellow, NSF Career award, ONR Young Investigator award, David Marr Prize honorary nomination, and invited lecture series at the Abdus Salum International Centre for Theoretical Physics at Trieste, Italy. His research has been founded by NSF, ARO, NASA, ONR, NIH and Microsoft Research.

Faculty News

Rob Gould to Receive NSF Grant

INSPIRE: NSF-funded grant to support a distance learning model for high school statistics teachers.

In collaboration with Cal Poly, San Luis Obispo and the American Statistical Association, our Department has received funding from the NSF to design and run a distance learning course to teach statistical concepts and tools to first-time high school statistics teachers. The grant is for 1 million dollars (well, slightly less, but it sounds better that way) over 3 years, and is more or less equally divided between the three institutions.

The project was designed to meet a need created by the sudden demand for qualified teachers of high school statistics. The rise of the Advanced Placement Statistics exam in the high schools is fueling a large part of the demand, but the mathematics curriculum framework in the NCTM 2000 guidelines, which has a statistics strand that begins in kindergarten, also plays a role. Many of those teaching statistics in the high schools have mathematics background and, at best, have had only a mathematical statistics course as part of their training. They themselves report being under-prepared to teach concepts such as the role of context in data analysis, graphical and exploratory analysis, inference, association and causation.

Currently, teachers looking for more statistics training rely on short-courses and workshops or an the informal support network provided by the very active AP-Statistics list-serv. However, these short-term courses are not designed to teach deep understanding. The INSPIRE project (INsight into Statistical Practice, Instruction and Reasoning) will attempt to fix this by providing participants with two year-long courses. The first-year course consists of a week-long workshop at Cal Poly that is followed by a year-long distance learning course designed to teach introductory statistical concepts and techniques. In the second year, participants are paired with a mentoring statistician from the ASA who will guide the participants in an actual data analysis project.

The distance learning course will be administered by UCLA. Rob Gould is running the "design" team that consists of Gretchen Davis, Dan Teague (North Carolina School of Science and Mathematics), and Kim Robinson (Clayton College and State University.) UCLA will also be teaching the distance course. The workshop will be designed by and run by a team at Cal Poly, consisting of Beth Chance and Allan Rossman (both from Cal Poly), Mary Mortlock (Thomas Jefferson High) and Chris Olsen (George Washington High). The second-year, "Practicum" component is being designed by Beth Benzing (McClean High School), Carolyn Morgan (Hampton University) and Judith O'Fallon (Mayo Clinic.) The PI is Roxy Peck at Cal Poly.

Faculty Grants and Support

New Grants

1) Rob Gould; Sponsor: NSF;ă Title: A distance Learning Model for High School Teachers; Award effective: 7/1/02-6/30/04

2) Song-Chun Zhu; Sponsor: Alfred P. Sloan Foundation; Title: Slaon Research Fellowship; Award effective: 9/16/02-9/15/03

3) Song-Chun Zhu; Sponsor: NSF; Title: Stochastic Modeling & Computing of Visual Patterns: From Descriptive to Generative Methods; Award effective: 7/1/02-5/31/06

4) Song-Chun Zhu; Sponsor: U.S. Navy/Office of Naval Research; Title: A comprehensive Statistical Framework for Image Understanding and ATR; Award effective: 8/26/02-9/30/04

5) Song-Chun Zhu & Yingnian Wu; Sponsor: NSF; Title: Learning Fundamental Atomic Image Structures from Natural Images, Videos and Shapes

6) Alan Yuille & Song-Chun Zhu; Sponsor: NIH/National Eye Institute; Title: Locating and Reading Informational Signs; Award Effective: 9/30/02-8/31/05

7) Hongquan Xu; Sponsor: NSF; Title: Nonregular Designs: Classification, Optimality and Construction; Award Effective: 8/26/02-9/30/04

On-going contracts and Grants

1) Richard Berk; Sponsor: California Department of Corrections; Award title: Prison Classification Study; Award Effective: 7/1/98-12/1/02

2) Yingnian Wu; Sponsor: Harvard University/NSF; Award title: Computational Inference, Monte Carlo, and Scientific Applications; Award effective: 1/1/01-12/31/02

3) Frederic Schoenberg; Sponsor: NSF; Award title:

Fire Hazards Estimation Using Point Process Methods; Award effective: 9/1/99-8/31/03

4) Robert Gould & Mahtash Esfandiari; Sponsor: NSF; Award title: A Statistics Undergraduate Computing Laboratory; Award effective: 3/1/00-2/28/03

Student News

Incoming in the M.S. Program

Elizabeth Bruch from UCLA
Jason Cheng from UCLA
Alice Chuang from the University of Pennsylvania
Amy Kwong from Cal Poly Pomona
Sovia Lau from Clarkson University
Naoko Maekawa from UC Irvine
Janine Miller from UC Riverside
Brian Ng from the University of Michigan
Yijing Shen from UC Irvine
Kaiding Zhu from Soochow University

Incoming in the Ph.D. Program

Maria Chang from Columbia University
Neda Farzinnia from the University of Wisconsin
Scott Gilpin from the University of Colorado
David Jansson from CSU Chico
Azusa Li from UC Davis
Lee Li from Beijing University
Wei Sun from Beijing University
Casper Wu from Beijing University

News About the Reading Room

Kelly worked hard during the summer to organize our "teaching library", which consists of a number of textbooks, old and new, and teaching aids, including the video series "Against All Odds". The books themselves are in Boelter 9401, and they are cataloged under the same electronic catalog that contains the rest of the reading room's contents. The catalog of the statistics library collection has its own homepage.

Staff News

Lisa Lara, Programmer Analyst, accepted another position at the City of Hope, and her last day was September 13th.

Tammy Bell, Administrative Specialist, accepted another position, which was a promotion for her, in the History Department here at UCLA.

Babak Samii was hired as our new Programmer Analyst on October 3rd. Babak is the computing support person for our department. He will also do web work and project development.

Michelle Govan was hired as our new Administrative Specialist in the Administrative office on October 21st. She handles orders for copying, keys, and parking. She will be handling purchase orders, payroll, personnel, and benefits after numerous training courses. She is also the assistant to the Chair.

We would like to welcome both Babak and Michelle to our department.

Course News

Proposed 296 Courses

296 courses are variable credit. We are aiming for at least two credits (meets 2 hrs/week). Students are required to read and listen and discuss and present. Some of them will be given each quarter (***), some only once a year (**), some only once (*). Some are weekly meet-

ings of faculty with their graduate students (RA's), so they may be capped at that number. Some have no RA or thesis advisor relationship at all.

The following courses have been proposed for this and next year. If they actually will take place will depend on interest (enrollment).

296A Classification, Prediction, and Regression (Richard Berk) (*)

296B Statistical Consulting (Richard Berk) (***)

296C Parallel and Distributed Statistical Computing (Vanessa Beddo) (**)

296D Multilevel Model Fitting and Model Selection (Richard Berk/Jan De Leeuw) (**)

296E Capita Selecta Multivariate Analysis (Jan De Leeuw) (**)

296F Computer Vision and Pattern Recognition (Alan Yuille and Song Chun Zhu) (***)

296G Quantitative Methods in Functional Genomics (Ker-Chau Li) (***)

296H Statistical Topics in Computational Biology (Chiara Sabatti) (***)

296I Spatial-Temporal Point Process Models and their Applications (Rick Schoenberg) (**)

Alumni News

Alumni Updates

The Statistics Department can only be as good as the students it produces, and we are very good indeed. To document this to others, the departmental webpage has an alumni section under construction.

Besides graduates of the department itself, we count as alumni those who wrote theses in statistics before the Statistics Division of the Mathematics Department came into existence in 1986. (Our earliest Ph.D. was a student of Paul Hoel's in 1950, for example, making us as old as Stanford's department in this regard.) We add those who got Statistics Masters degrees or who wrote theses in statistics during the time the Division existed. Finally, we count as alumni those students who wrote their theses here while getting degrees from other departments at UCLA or even, occasionally, from other schools.

The intention is to locate all our alumni — where they are, what they are currently doing, how to contact them — and we can use help in this. Please visit the webpage, then send the details about those you know through our alumni update webform. What fun!

Update on the Major in Statistics

Rob Gould

What do you do if you're an undergraduate at UCLA with a passion for data? At the moment, the best you can do is minor in Statistics, but that should soon change. The Department is preparing a proposal to offer an undergraduate major program in Statistics.

Historically, in the academic community at large there has not been great interest in a Statistics major by either students or the statistics community. Students entered the university unaware that a career in statistics was a viable option, and the consensus view among statisticians was that statistics was sufficiently complex and nuanced that it could be practiced only after graduate study. As late as 1991, an initiative by the American Statistical Association to propose guidelines for Undergraduate Statistics Curricula was killed, in part due to concerns over the appropriateness of such a degree.

However, there is now, among entering students, an increasing awareness of statistics as a discipline in its own right. (And not just because we force them to take an intro Stats course once they get to UCLA.) This is due to some revolutionary and most welcome developments in statistics education. In the late 1990's, the National Council of Teachers of Mathematics (NCTM) passed national standards for mathematics curriculum that included a probability and statistics strand throughout the K-12 curriculum. Although controversial (albeit less so after modifications in the 2000 revision of the Standards), the result was that textbook publishers and schools began to teach basic data analysis (sometimes very basic) as early as kindergarten. Recent changes at the high school level are even more dramatic. In 1997 the College Board offered an Advanced Placement test in Statistics and 7000 students took the exam. In 2002, about 50,000 students took the exam, making it one of the most popular AP exams. A side-effect has been the establishment of non-AP Statistics classes in many high schools. An interesting result has been that arguably more students enter UCLA with exposure to Statistics

than with exposure to Calculus. (This is very arguable, but a satisfying thing to say if you want to shock a mathematician.)

Recognizing much room for improvement in the traditional introductory statistics course, teachers of college statistics have in recent years shifted the emphasis away from theory and towards using real data and data analysis techniques. This shift marks a shift in the discipline itself away from mathematical theory and towards application. As a consequence, the consensus opinion among statisticians that Statistics is solely a graduate-level discipline has weakened considerably. In his 1987 Presidential Address to the American Statistical Association, then-president Donald Marquardt urged statisticians to recognize an undergraduate statistics degree as a viable, alternative path towards graduate school study. But it was not until 2001 that the American Statistical Association was able to pass official guidelines for undergraduate studies in statistics.

In general agreement with the ASA guidelines, the UCLA Statistics majors will have a substantial emphasis on application. In addition to a mathematical statistics sequence and an applied statistics sequence, students will also study computer programming, data base management, and various topics in Statistics. Students will be strongly encouraged to complete a minor in a data-generating discipline and will "finish off" their degree by completing an applied project for a consulting client.

We hope that a great number of our future majors will be inspired to pursue their statistics career in graduate school. In case they do not, we are working with the UCLA Career Center to assist them in counseling students on finding careers in the "real world" that will use the strong quantitative skills this program will teach.

Recent Publications

Preprints, Papers & Reviews

For full text on these and other recent publications in our department please visit http://preprints.stat.ucla.edu.

"Statistical Modeling of Texture Sketch" by Y. Wu, S.-C. Zhu and C. Guo

This paper was presented at the European Conference of Computer Vision, 2002. Where the authors use sparse coding and independent component analysis to study human vision and perception as linear superposition of a small number of localized, elongated and oriented image bases. In this framework an sketch of an image can be represented as a composition of each image base using a generative model of textures. A two-level approach is taken where the top-level uses a Markov chain model, described by simple geometric feature statistics, for the placement of the image bases. The bottom-level represents the image texture by a linear superposition of image bases.

"Gradient projection algorithms for arbitrary rotation criteria in factor analysis, with examples" by C.A. Bernaards and R.I. Jennrich

This manuscript is currently in submision. In this work the authors provide gradient projection algorithms to optimize virtually any rotation criterion. Algorithms and rotation criteria were implemented in Matlab, Splus and R, SAS PROC IML, and SPSS matrix language, and are available for free download. The authors implemented, and tested Bentler's invariant pattern simplicity, the orthomax and orthomin families, the Crawford-Ferguson family, along with many other well-known and less known rotation criteria.

"Detection of nonlinearities in the dependence of burn area on fuel age and climatic variables in Los Angeles County, California" by F. Schoenberg, R. Peng, Z. Huang and P. Rundel

In this 2002 paper the authors provide evidence suggesting direct non-linear relationships between wildfire burn area and fuel age, temperature, precipitation, and fuel moisture. Their data supports the notion that fire risk is nearly constant provided various conditions are met: that fuel age and temperature exceed a given threshold, and that fuel moisture and precipitation are sufficiently low. There appears to be little distinction in terms of wildfire risk between conditions that are sufficient for wildfires and those that are extreme.

"Image Segmentation by Data Driven Markov Chain Monte Carlo" by S.-C. Zhu and Z. Tu

Zhu and Tu published this paper in the IEEE Transactions on Pattern Analysis and Machine Intelligence in 2002. Data-Driven Markov Chain Monte Carlo (DDMCMC) model is used as a computational paradigm for image segmentation in a Bayesian statistical framework. Based on an efficient and well-balanced Markov Chain design the authors explore the complex solution space for image segmentation. Clustering and edge detection are

employed in synchrony to compute probabilities, which drive the Markov chain dynamics and achieve tremendous speedup in comparison to the traditional jump-diffusion methods. The DDMCMC paradigm provides a unifying framework in which the role of different existing segmentation, edge detection, clustering, region growing and region competition algorithms are revealed as realizing Markov chain dynamics and computing importance proposal probabilities. The DDMCMC method was tested extensively on both color and gray-level images.

"Legalized Abortion and the Homicide of Young Children: An Empirical Investigation" by S. Sorenson, D. Weibe and R. Berk

A causal link has been suggested between the legalization of abortion in the late 1960s and early 1970s and the precipitous decline in crime in the 1990s. Using 1960-1998 U.S. mortality data for children under 5 years of age and an interrupted time series design, the authors found that the legalization of abortion was not associated with a sudden change in child homicide trends. It was, however, associated with a steady decrease in the homicides of toddlers (i.e., 1- to 4-year-olds) in subsequent years. Although in the predicted direction, the decrease in homicides of children under 1 year of age was not statistically significant. Competing explanations that could be examined in the data (e.g., changes in mortality classification) do not account for these findings with the result that the link between the legalization of abortion and reductions in homicide gains some credibility.

"Genomewide Motif Identification Using a Dictionary Model" by C. Sabatti and K. Lange

Sabatti and Lange developed a new model for statistical analysis of DNA data in this 2002 paper. The authors survey the state-of-the-art models and algorithms for identifying binding sites in non-coding regions of DNA. These sites control the transcription of genes into messenger RNA in preparation for translation into proteins. Three different models for binding site identification are presented in a unified framework that integrates the main features of some standard approaches. This technique uses maximum likelihood and maximum a posteriori algorithms for fitting the unified model to data.

"Quantitative Analysis of Literary Styles" by R. Peng and N. Hengartner

Roger Peng recently published an article titled "Quantitative Analysis of Literary Styles" in The American Statistician, vol. 53, pp. 175–185. This paper was co-authored with Nicolas Hengartner of the Los Alamos National Laboratory Statistics Group. The paper uses techniques such as principal component analysis (PCA) and linear discriminant analysis (LDA) to analyze word count data from various novelists and playrights. In particular, the usage of so called "function words" (i.e. words with very little contextual meaning) are examined and compared between authors. In their seminal analysis of the Federalist Papers, Mosteller and Wallace proposed using function words as the unit of analysis when comparing literary styles The idea is that function words such as "and", "a", and "the" serve as the "noise" of literature and one might expect their usage to be consistent between different works of the same author. The current paper shows that function words are indeed useful for distinguishing authorship. In addition, the use of PCA and LDA with the function word counts is shown to provide a useful method for exploring graphically the word usages of various authors.

Calendar

Events in the Department

Important upcoming dates

Fall Quarter 2002 begins: Thursday, September 26
Veterans' Day Holiday: Monday, November 11
Thanksgiving holiday: Thursday-Friday, November 28-29
Fall Quarter 2002 ends: Friday, December 13
Winter Quarter 2003: begins Monday, January 6

Bits && Bytes

Computing News, Information and Tips

Welcome. This section is dedicated to disseminating computer related news from the Department of Statistics at UCLA and to provide information and tips that we hope will serve the broader readership.

Cluster Update

Parallel programming resources are being created for teaching and helping programmers. Support pages[1] are being set up as repository of answers to frequently asked questions. A list of reference materials[2] is also available. Finally, a new course, Statistics 296C, "Parallel and Distributed Statistical Computing", will be offered next year.

Our department's demand for faster and larger capacity computational systems continues to grow. The Genomic Data Refinery project[3] is working on Bioinfomatics gene expression problems. The Center for Image and Vision Science[4] is pursuing a unified computational theory underlying visual perception and learning. Exploration and optimization of statistical parallel algorithms that operate on massive datasets[5] is an ongoing area of research.

Users with varying degrees of expertise and schedules need access to our computing systems. To meet the competing demand and various needs we define classes of clusters: The **Dedicated Cluster** is where researchers run debugged and possibly optimized code when dedication of resources and the shortest time to completion are required. The dedicated cluster comprises of 20 x 1 GHz PowerPC (≈1.8 GHz Pentium) processors. Scheduling is managed and access is by permission only. The **Sandbox Cluster** is where debugging, optimization, and learning can be done. Code debugged on this system can then be run on the dedicated cluster. The sandbox cluster comprises of 10 x 400 MHz PowerPC (≈800 MHz Pentium) processors. Scheduling is managed and access is by permission only. The **Shared Cluster** is available to any affiliated department member, only an account on the Statistics network is neccessary. On it one will find the same tools as those found on the dedicated and sandbox systems. The shared cluster is comprised of 4 x 1 GHz PowerPC (≈1.8 GHz Pentium) processors. Neither scheduling nor access are supervised. **Specialized Clusters** are in the possession of research groups. The Center for Image and Vision Science[4] and the GDR Project[3] will soon be acquiring their own clusters.

To schedule time or obtain an account to work on our clusters write to cluster@stat.ucla.edu. You must be affiliated with our department in order to obtain access.

Streamlined UNIX Printing with CUPS

The Common UNIX Printing System (CUPS) is a powerful, feature rich system which streamlines UNIX printing. Features of CUPS for the administrator include:

- Paper quota management
- Printer access authentication
- Multiple printer load balancing and fail-over printing
- An administrative web interface (available from `http://localhost:631`)

Features for end users include:

- The CUPS system is now fully integrated into the Jaguar system. It is the same printing system in the Mac OS X Aqua environment as it is in its BSD command line environment
- Without any extra effort filters are included that print PDF files, image files, raster images, text files, postscript files. For example, assuming a default printer is defined, to print a PDF file in the command line simply type:
`lpr Statistical_Moments.pdf`
You will see it just works. No need to ever invoke `ps2pdf` or `gs` ever again.
- Available printers can be discovered from the command line with `lpstat -p -d`. In Mac OS X systems you will see a familiar list of printers. They are the names of printers one added using the "Print Center" (except, in true UNIX fashion, spaces are replaced with underscores)

CUPS is available for most flavors of UNIX from the CUPS web site. Jaguar users already get it without any extra effort. For further information please refer to:

- The book "CUPS: Common UNIX Printing System" by Michael Sweet.
- The man pages `lp`, `lpstat`, `lpadmin`, `lpq`, `lprm`, and `cancel`.
- The CUPS administrative web interface found at http://localhost:631 (available only if CUPS and Apache are installed and running on your computer).
- The official CUPS web site http://www.cups.org and the Printer Working Group web site http://www.pwg.org.

[1] http://www.stat.ucla.edu/support
[2] http://www.stat.ucla.edu/computing/clusters/
[3] http://www.stat.ucla.edu/gdr
[4] http://civs.stat.ucla.edu
[5] http://www.stat.ucla.edu/~beddo

Typesetting Mathematics on the WEB

The Mathematics Markup Language (MathML) is an extension to HTML for typesetting mathematics on the web.

A MathML capable browser displays mathematical expressions and HTML text on the page together as an integrated whole, without dependencies on PDF, JPEG, GIF, etc. It is essentially TeX for the web. MathML capable browsers include:

- Mozilla 1.2b for Mac OS X
- Chimera for Mac OS X
- Netscape 7 for Mac OS X, Linux and Windows
- Internet Explorer 6 for Windows

Examples of MathML documents can be found on the web. Two good examples are:

- "Applications of Chaos Models in Economics"[6]
- A MathML test suite[7]

Applications for creating MathML can be found at http://www.w3.org/Math/implementations.html.

The Tip Off: Image Format Conversion with the Preview Application

The Preview application bundled with Mac OS X Jaguar can convert between graphics formats. It is quite simple:

1) Select the "File → Export..." menu item

2) Select a format from the "Format:" pop-up list. Available formats include: BMP, JP2, JPEG, MacPaint, PDF, Photoshop, PICT, PNG, Quicktime Image, SGI, TGA, TIFF

3) Click on the Save button

That is all there is to it.

[6] http://pear.math.pitt.edu/mathzilla/Examples/chaos/studentReports/CynthiaKinnan.xml
[7] http://www.w3.org/Math/testsuite/

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