

Statistician
Search Quality
Google, Inc.
Mountain View, CA

Rajan S. Patel

940 Guerrero St #5
San Francisco, CA 94110
rajan@alumni.rice.edu
813.810.6915

EDUCATION

Doctor of Philosophy, Biostatistics, achieved in February 2006
Emory University, Atlanta, Georgia
Advisor: F. DuBois Bowman, Ph.D.
Dissertation Topic: Determining Connectivity of the Human Brain with Functional Neuroimaging Data

Master of Science, Computer Science, achieved in May 2002.
Rice University, Houston, Texas.

Bachelor of Arts, Computer Science, achieved in May 2001.
Rice University, Houston, Texas.

Bachelor of Arts, Economics, achieved in May 2001.
Rice University, Houston, Texas.

WORK EXPERIENCE

Google, Inc.

Search Quality Statistician – Mountain View, CA. (June 2007-present)
Develop metrics, design studies, and analyze data to help quantify and evaluate search quality. Find ways to improve ranking of search results.

Department of Biostatistics – Emory University

Adjunct Assistant Professor of Biostatistics
Emory University. Atlanta, GA (June 2007-present)
Develop statistical methodology to advance the analysis of functional neuroimaging data.
Contribute as a member of the Center for Biomedical Imaging Statistics.

Amgen, Inc.

Biostatistics Manager. Thousand Oaks, CA. (November 2006-June 2007)
Senior Biostatistician. Thousand Oaks, CA. (February 2006-November 2006)
Work in teams to plan, design, execute, and analyze the data from early phase clinical trials. Plan studies and conduct various analyses for biomarker development including imaging biomarkers such as fMRI and FDG-PET. Took the initiative to plan the development of a repository and computation server for high throughput data such as microarray and various imaging data. Conduct bioequivalence, dose proportionality, and various PK/PD analyses using linear and non-linear mixed effects models.

Johnson & Johnson Pharmaceutical Research & Development

Biostatistics Internship. Titusville, NJ. (Summer 2003)
Developed repeated measures mixed effects models analyzing the effect of risperidone on children. Modeled weight gain and height gain as well as change in prolactin over time. Analyzed prolactin's effect on height gain. Corrected height and weight measures for natural growth using population growth charts.

RESEARCH EXPERIENCE

Develop and apply statistical methodology to assess functional connectivity of the human brain with functional MRI (fMRI), and provide a framework for assessing differences and changes in connectivity between groups and over time, respectively. (2007-present)

Examine information loss as a result of discarding phase information in fMRI. Quantify information loss by examining how much better/worse we can classify brain states by incorporating phase information. (2007-present)

Advisor: Dr. Dubois Bowman

Assistant Professor of Biostatistics, Emory University

Developed statistical methodology for positron emission tomography (PET) and functional MRI (fMRI) data to better understand functional connectivity of the human brain. In particular, utilized wavelets and wavelet packets to estimate background spatial correlation in functional neuroimaging data and subsequently generate surrogate 4D spatiotemporal fMRI data. Furthermore, developed methodology to cluster brain regions functionally by using novel hierarchical clustering algorithms. (2002-2006)

Advisor: Dr. Ira Longini

Professor of Biostatistics, Emory University

Developed stochastic simulation of a bioterrorist smallpox attack. Modeled the control of intentional bioterrorist smallpox attack. Graphically represented spread of infection throughout population. (2003–2005)

Advisor: Dr. Ira Longini

Professor of Biostatistics, Emory University

Optimal parameter estimation using genetic algorithms. Determined an optimal vaccine/anti-viral distribution strategy among a population given a limited amount of vaccine. Evaluated the accuracy and algorithmic complexity of genetic algorithms in an stochastic model setting. (2003–2005)

Advisor: Dr. Michael Haber

Professor of Biostatistics, Emory University

Developed an agent based simulation of a flu epidemic based on U.S population in Fortran/C. Determined contact rates of individuals to use as parameters in stochastic models. (2002–2006)

GRANTS AND AWARDS

Google.org Global Impact Award – In appreciation for dedication and outstanding work developing Google Flu Trends

Merck Fellowship (2003-2006).

Three year award including full tuition, fees, and stipend.

Emory University Graduate Student Scholarship (2002-2003).

Three year award including full tuition, fees, and stipend.

SRCOS/ASA Clint Miller Award for best poster at the Summer Research Conference on Statistics (2005). \$100 cash award

SRCOS/ASA R.L. Anderson Student Paper Award at the Summer Research Conference on Statistics (2005). \$500 travel award.

Functional Image Analysis Contest (2005)

Finalist

Organization for Human Brain Mapping, 11th Annual Conference, Toronto, ON

TEACHING EXPERIENCE

Teacher Assistant Training and Teaching Opportunity (TATTO)

TATTO prepares graduate students to enter the professoriate as confident and competent teachers. Course completed in 2003.

Courses Taught

BIOS 503: Intro to Biostatistics

Courses Assisted in Teaching

BIOS 500: Statistical Methods I

BIOS 501: Statistical Methods II
BIOS 503: Intro to Biostatistics
BIOS 510: Probability Theory I
BIOS 707: Theory of Linear Models

BIOS 500/501: Taught an introduction biostatistics programming class to first year Master's students in the Rollins School of Public Health. Responsibilities included teaching statistical methods and their applications with SAS, making and grading quizzes, and holding office hours. BIOS 510/707 (PhD level courses): Assisted in teaching and grade homework.

PUBLICATIONS

Ginsberg J, Mohebbi M, **Patel R**, Brammer L, Smolinski M, Brilliant L. Detecting influenza epidemics using search engine query data. *Nature*. (in press).

Patel R, Rilling JK. A genetic algorithm to optimize the fMRI data analysis pipeline for prediction. *NeuroImage*. (in press)

Rilling JK, Kaufman TL, Smith EO, **Patel R**, Worthman C (2008). Abdominal depth and waist circumference as influential determinants of human female attractiveness. *Evolution and Human Behavior* 30, 21-31.

Patel R, Borsook D, Becerra L (2008). Modulation of Resting State Functional Connectivity of the Brain by Naloxone Infusion. *Brain Imaging and Behavior* 2, 11-13.

Derado G, Vidakovic B, Bowman FD, **Patel R** (2007). Wavelet image interpolation (WII): A Wavelet-based Approach to Enhancement of Digital Mammography Images. ISBRA07 symposium.

Haber M, Shay D, Thompson W, **Patel R**, Orenstein E, Fukuda K (2007). Effectiveness of Interventions to Reduce Contact Rates during a Simulated Influenza Pandemic. *Emerging Infectious Diseases* 13 (4).

Patel R, Bowman FD, Rilling JK (2006). Determining hierarchical functional networks from auditory stimuli fMRI. *Human Brain Mapping* 27, 462-470.

Patel R, Van De Ville D, Bowman FD (2006). Determining significant connectivity by 4D spatiotemporal wavelet packet resampling of functional neuroimaging data. *NeuroImage* 31, 1142-1155.

Patel R, Bowman FD, Rilling JK (2006). A Bayesian approach to determining connectivity of the human brain. *Human Brain Mapping* 27, 267-276.

Patel R, Longini IL, Halloran ME (2005). Finding optimal vaccination strategies for pandemic influenza using genetic algorithms. *Journal of Theoretical Biology* 234, 201-212.

Bowman FD and **Patel R** (2004). Identifying spatial relationships in neural processing using a multiple classification approach. *Neuroimage* 23, 260-268.

Bowman FD, **Patel R**, and Lu C (2004). Methods for detecting functional classifications in neuroimaging data. *Human Brain Mapping* 23, 109-119.

Longini IL, Halloran ME, Nizam A, Yang Y, **Patel R** (2003). Stochastic simulation of bioterrorist smallpox. Technical Report 03-09.

PRESENTATIONS

Patel R (2008). Developing epidemiologic models from search engine data. Bloomberg School of Public Health. Johns Hopkins University.

Bowman FD , **Patel R** (2007). A Bayesian Hierarchical Model for Determining Connectivity of the Human Brain. Biomedical Imaging Technology Center, Emory University.

LoRusso P, McGrievy J, Sun Y, Melara R, Malburg L, Guthrie T, **Patel R**, Ingram M, Heath E, Wiezorek J (2007). Effect of co-administration of ketoconazole, a strong CYP3A4 inhibitor, on pharmacokinetics and tolerability of AMG 706 in patients with advanced solid tumors. AACR.

Gordon M, Mendelson D, Sweeney C, Erbeck N, **Patel R**, Kakkar T, Yan L, Eckhardt G, Gore L (2007). Interim results from a first-in-human study with AMG 102, a fully human monoclonal antibody that neutralized the ligand to c-Met receptor, in patients with advanced solid tumors. ASCO.

Patel R, Becerra L, Borsook D (2007). Modulation of functional connectivity of the brain by naloxone infusion during resting state. ENAR.

Patel R, Bowman FD, Guo Y, Derado G (2006). Interpreting experience-based cognition from fMRI. Joint Statistical Meetings.

Patel R, Van De Ville D, Bowman FD (2006). Determining significant connectivity by 4D spatiotemporal wavelet packet resampling of functional neuroimaging data. Conference of the Organization of Human Brain Mapping.

Patel R, Van De Ville D, Bowman FD (2005). Determining significant connectivity by 4D spatiotemporal wavelet packet resampling of functional neuroimaging data. Joint Statistical Meetings.

Patel R, Bowman FD, Rilling JK (2005). Functional Image Analysis Contest: Determining connectivity of phonological and semantic processing. Conference of Organization for Human Brain Mapping.

Patel R, Longini IL, Halloran ME (2005). Finding optimal vaccination strategies for pandemic influenza using genetic algorithms. Summer Research Conference on Statistics.

Patel R, Bowman FD, Rilling JK (2005). A Bayesian Approach to Determining Connectivity of the Human Brain. ENAR.

Patel R and Bowman FD (2004). Determining Connectivity of the Human Brain. Department of Biostatistics 40th Anniversary.

Patel R, Longini IL, Halloran ME (2004). Finding optimal vaccination strategies for pandemic influenza using genetic algorithms. Department of Biostatistics 40th Anniversary.

Patel R and Bowman FD (2004). Exploring spatial relationships in functional neuroimaging data. ENAR.

ACADEMIC SERVICE

Scientific Advisory Board for the Organization of Human Brain Mapping – 2006 – present.
Peer Reviewer for Human Brain Mapping – 2006–present.
Biostatistics Faculty Search Committee – 2004-2005
Biostatistics department student representative. 2003.
Statistical Software Interest Group. 2003.
Student Concerns Committee. 2003.

PROFESSIONAL MEMBERSHIPS

American Statistical Association. (2003-present)
International Biometric Society, ENAR. (2003-present)
Organization for Human Brain Mapping (2005-present)

PROGRAMMING SKILLS

Programming Languages: SAS, Splus/R, Java, C, C++, HTML, VB, SQL Database, ASP
Databases: Oracle, Access 97/2000, MySQL, PL/SQL
Platforms: SunOS/Solaris, Linux, Win XP/NT/2000/9x, Classic Mac/OS X
WWW: JavaScript, HTML, XML, ASP, ColdFusion, Java Applets
Proficient in: SAS, Java, C, C++, OpenGL, MATLAB, SPM, SQL

REFERENCES

Michael Kutner, Ph.D.
Department of Biostatistics, Emory University.
Department Chair
mkutner@sph.emory.edu

F. DuBois Bowman, Ph.D.
Department of Biostatistics, Emory University.
Assistant Professor
dbowma3@sph.emory.edu

David Mease, Ph.D.
Google, Inc.
dmease@google.com