



Richard A. Olshen

Professor of Biomedical Data Science, Emeritus

CONTACT INFORMATION

- **Alternate Contact**

Bonnie Chung - Computing Information Systems Analyst

Email bchung@stanford.edu

Tel (650)723-5301

Bio

BIO

Olshen's research is in statistics and their applications to medicine and biology. Many efforts have concerned tree-structured algorithms for classification, regression, survival analysis, and clustering. Those for classification have been used with success in computer-aided diagnosis and prognosis, while those for clustering have been applied to lossy data compression in digital radiography. Modeling and sample reuse methods have been developed for longitudinal data, concerning gait analysis; renal physiology; cholesterol; nephrophysiology; and recently, molecular genetics.

ACADEMIC APPOINTMENTS

- Professor Emeritus-Hourly, Biomedical Data Science
- Member, Bio-X
- Member, Stanford Cancer Institute

ADMINISTRATIVE APPOINTMENTS

- Director, Laboratory for Mathematics and Statistics, University of California, San Diego, (1982-1989)
- Director, Biostatistics Unit, UCSD Cancer Center, (1978-1989)
- Chief, Division of Biostatistics, Department of Health Research and Policy, Stanford, (1998- present)

HONORS AND AWARDS

- Fellowship, John Simon Guggenheim Memorial Foundation (1987-88)
- Fellow, Institute of Mathematical Statistics (1973)
- Fellow, American Association for the Advancement of Science (1990)
- Fellow, American Statistical Association (1996)
- Fellow, Institute of Electrical and Electronics Engineers (IEEE) (2006)

PROFESSIONAL EDUCATION

- Ph.D., Yale University , Statistics (1966)

LINKS

- My personal site: <http://www-stat.stanford.edu/~olshen>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research is in statistics and their applications to medicine and biology. Many efforts have concerned tree-structured algorithms for classification, regression, survival analysis, and clustering. Those for classification have been used with success in computer-aided diagnosis and prognosis and for studies of complex human disease by association with single nucleotide polymorphisms and other predictors. Those for clustering have been applied to lossy data compression in digital radiography. Modeling and sample reuse methods have been developed for longitudinal data, concerning gait analysis; renal physiology; cholesterol; and molecular genetics.

Teaching

COURSES

2016-17

- Survival Analysis: STATS 331 (Spr)

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biomedical Informatics (Phd Program)
- Immunology (Phd Program)

Publications

PUBLICATIONS

- **Predicting complication risk in spine surgery: a prospective analysis of a novel risk assessment tool.** *Journal of neurosurgery. Spine*
Veeravagu, A., Li, A., Swinney, C., Tian, L., Moraff, A., Azad, T. D., Cheng, I., Alamin, T., Hu, S. S., Anderson, R. L., Shuer, L., Desai, A., Park, et al
2017; 1-11
- **Predicting Occurrence of Spine Surgery Complications Using "Big Data" Modeling of an Administrative Claims Database** *JOURNAL OF BONE AND JOINT SURGERY-AMERICAN VOLUME*
Ratliff, J. K., Balise, R., Veeravagu, A., Cole, T. S., Cheng, I., Olshen, R. A., Tian, L.
2016; 98 (10): 824-834
- **Diversification of the antigen-specific T cell receptor repertoire after varicella zoster vaccination.** *Science translational medicine*
Qi, Q., Cavanagh, M. M., Le Saux, S., Namkoong, H., Kim, C., Turgano, E., Liu, Y., Wang, C., Mackey, S., Swan, G. E., Dekker, C. L., Olshen, R. A., Boyd, et al
2016; 8 (332): 332ra46-?
- **High-throughput sequencing insights into T-cell receptor repertoire diversity in aging** *GENOME MEDICINE*
Goronzy, J. J., Qi, Q., Olshen, R. A., Weyand, C. M.
2015; 7: 117
- **Risk of Cardiovascular Events Associated With Current Exposure to HIV Antiretroviral Therapies in a US Veteran Population.** *Clinical infectious diseases*
Desai, M., Joyce, V., Bendavid, E., Olshen, R. A., Hlatky, M., Chow, A., Holodniy, M., Barnett, P., Owens, D. K.
2015; 61 (3): 445-452
- **Diversity and clonal selection in the human T-cell repertoire** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Qi, Q., Liu, Y., Cheng, Y., Glanville, J., Zhang, D., Lee, J., Olshen, R. A., Weyand, C. M., Boyd, S. D., Goronzy, J. J.
2014; 111 (36): 13139-13144
- **Insulin resistance: regression and clustering.** *PloS one*
Yoon, S., Assimes, T. L., Quertermous, T., Hsiao, C., Chuang, L., Hwu, C., Rajaratnam, B., Olshen, R. A.

2014; 9 (6)

- **Insulin resistance: regression and clustering.** *PloS one*
Yoon, S., Assimes, T. L., Quertermous, T., Hsiao, C., Chuang, L., Hwu, C., Rajaratnam, B., Olshen, R. A.
2014; 9 (6): e94129
- **Assessing gene-level translational control from ribosome profiling** *BIOINFORMATICS*
Olshen, A. B., Hsieh, A. C., Stumpf, C. R., Olshen, R. A., Ruggero, D., Taylor, B. S.
2013; 29 (23): 2995-3002
- **Risk of Cardiovascular Disease from Antiretroviral Therapy for HIV: A Systematic Review** *PLOS ONE*
Bavinger, C., Bendavid, E., Niehaus, K., Olshen, R. A., Olkin, I., Sundaram, V., Wein, N., Holodniy, M., Hou, N., Owens, D. K., Desai, M.
2013; 8 (3)
- **Risk of cardiovascular disease from antiretroviral therapy for HIV: a systematic review.** *PloS one*
Bavinger, C., Bendavid, E., Niehaus, K., Olshen, R. A., Olkin, I., Sundaram, V., Wein, N., Holodniy, M., Hou, N., Owens, D. K., Desai, M.
2013; 8 (3)
- **Successive Standardization: Application to Case-Control Studies** *21st International-Chinese-Statistical-Association (ICSA) Applied Statistics Symposium*
Rajaratnam, B., Oh, S., Tsiang, M. T., Olshen, R. A.
SPRINGER.2013: 229-239
- **Persistence versus Reversion of 3TC Resistance in HIV-1 Determine the Rate of Emergence of NVP Resistance** *VIRUSES-BASEL*
Rath, B. A., Olshen, R. A., Halpern, J., Merigan, T. C.
2012; 4 (8): 1212-1234
- **Successive Standardization of Rectangular Arrays.** *Algorithms*
Olshen, R. A., Rajaratnam, B.
2012; 5 (1): 98-112
- **Significance analysis of xMap cytokine bead arrays** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Won, J., Goldberger, O., Shen-Orr, S. S., Davis, M. M., Olshen, R. A.
2012; 109 (8): 2848-2853
- **SNPs and Other Features as They Predispose to Complex Disease: Genome-Wide Predictive Analysis of a Quantitative Phenotype for Hypertension** *PLOS ONE*
Won, J., Ehret, G., Chakravarti, A., Olshen, R. A.
2011; 6 (11)
- **Parent-specific copy number in paired tumor-normal studies using circular binary segmentation** *BIOINFORMATICS*
Olshen, A. B., Bengtsson, H., Neuvial, P., Spellman, P. T., Olshen, R. A., Seshan, V. E.
2011; 27 (15): 2038-2046
- **Five Blood Pressure Loci Identified by an Updated Genome-Wide Linkage Scan: Meta-Analysis of the Family Blood Pressure Program** *AMERICAN JOURNAL OF HYPERTENSION*
Simino, J., Shi, G., Kume, R., Schwander, K., Province, M. A., Gu, C. C., Kardina, S., Chakravarti, A., Ehret, G., Olshen, R. A., Turner, S. T., Ho, L., Zhu, et al
2011; 24 (3): 347-354
- **REMEMBERING LEO BREIMAN** *ANNALS OF APPLIED STATISTICS*
Olshen, R. A.
2010; 4 (4): 1644-1648
- **SUCCESSIVE NORMALIZATION OF RECTANGULAR ARRAYS** *ANNALS OF STATISTICS*
Olshen, R. A., Rajaratnam, B.
2010; 38 (3): 1638-1664
- **Th17 and Th1 T-Cell Responses in Giant Cell Arteritis** *CIRCULATION*
Deng, J., Younge, B. R., Olshen, R. A., Goronzy, J. J., Weyand, C. M.
2010; 121 (7): 906-U107

- **Quality Evaluation for Compressed Medical Images: Fundamentals** *HANDBOOK OF MEDICAL IMAGE PROCESSING AND ANALYSIS, 2ND EDITION*
Cosman, P., Gray, R., Olshen, R., Bankman, I. N.
2009: 917–33
- **Quality Evaluation for Compressed Medical Images: Statistical Issues** *HANDBOOK OF MEDICAL IMAGE PROCESSING AND ANALYSIS, 2ND EDITION*
Cosman, P., Gray, R., Olshen, R., Bankman, I. N.
2009: 934–43
- **Quality Evaluation for Compressed Medical Images: Diagnostic Accuracy** *HANDBOOK OF MEDICAL IMAGE PROCESSING AND ANALYSIS, 2ND EDITION*
Cosman, P., Gray, R., Olshen, R., Bankman, I. N.
2009: 944–62
- **New models and online calculator for predicting non-sentinel lymph node status in sentinel lymph node positive breast cancer patients** *30th Annual San Antonio Breast Cancer Symposium*
Kohrt, H., Olshen, R., Bermas, H., GOODSON, W., Henry, S., Rouse, R., Bailey, L., Philben, V., Dirbas, F., Dunn, J., Johnson, D., Wapnir, I., Carlson, et al
SPRINGER.2008: 588–88
- **New models and online calculator for predicting non-sentinel lymph node status in sentinel lymph node positive breast cancer patients** *BMC CANCER*
Kohrt, H. E., Olshen, R. A., Bermas, H. R., Goodson, W. H., Wood, D. J., Henry, S., Rouse, R. V., Bailey, L., Philben, V. J., Dirbas, F. M., Dunn, J. J., Johnson, D. L., Wapnir, et al
2008; 8
- **Associations Among Multiple Markers and Complex Disease: Models, Algorithms, and Applications** *GENETIC DISSECTION OF COMPLEX TRAITS, 2ND EDITION*
Assimes, T. L., Olshen, A. B., Narasimhan, B., Olshen, R. A.
2008; 60: 437-464
- **Orthopaedic surgery core curriculum: Foot and ankle reconstruction** *FOOT & ANKLE INTERNATIONAL*
Wadey, V. M., Halpern, J., Younger, A. S., Dev, P., Olshen, R. A., Walker, D.
2007; 28 (7): 831-837
- **An investigation of genome-wide associations of hypertension with microsatellite markers in the Family Blood Pressure Program (FBPP)** *HUMAN GENETICS*
Gu, C. C., Hunt, S. C., Kardia, S., Turner, S. T., Chakravarti, A., Schork, N., Olshen, R., Curb, D., Jaquish, C., Boerwinkle, E., Rao, D. C.
2007; 121 (5): 577-590
- **Heritability of left ventricular mass in Japanese families living in Hawaii: the SAPPHiRe Study** *JOURNAL OF HYPERTENSION*
Assimes, T. L., Narasimhan, B., Seto, T. B., Yoon, S., Curb, J. D., Olshen, R. A., Quertermous, T.
2007; 25 (5): 985-992
- **Orthopaedic surgery core curriculum: the spine** *POSTGRADUATE MEDICAL JOURNAL*
Wadey, V. M., Halpern, J., Bouchard, J., Dev, P., Olshen, R. A., Walker, D.
2007; 83 (978): 268-272
- **Canadian multidisciplinary core curriculum for musculoskeletal health** *JOURNAL OF RHEUMATOLOGY*
Wadey, V. M., Tang, E., Abelseth, G., Dev, P., Olshen, R. A., Walker, D.
2007; 34 (3): 567-580
- **Tree-structured regression and the differentiation of integrals** *ANNALS OF STATISTICS*
Olshen, R. A.
2007; 35 (1): 1-12
- **Directly measured insulin resistance and the assessment of clustered cardiovascular risks in hypertension** *AMERICAN JOURNAL OF HYPERTENSION*
Lin, M., Hwu, C., Huang, Y., Sheu, W. H., Shih, K., Chiang, F., Olshen, R., Chen, Y. I., Curb, J. D., Rodriguez, B., Ho, L.
2006; 19 (11): 1118-1124
- **Genome-wide linkage scans for loci affecting total cholesterol, HDL-C, and triglycerides: the Family Blood Pressure Program** *HUMAN GENETICS*
Bielinski, S. J., Tang, W., Pankow, J. S., Miller, M. B., Mosley, T. H., Boerwinkle, E., Olshen, R. A., Curb, J. D., Jaquish, C. E., Rao, D. C., Weder, A., Arnett, D. K.

2006; 120 (3): 371-380

- **Predicting non-sentinel lymph node involvement in breast cancer patients.** *42nd Annual Meeting of the American-Society-of-Clinical-Oncology*
Kohrt, H. E., Olshen, R. A., Goodson, W. H., Rouse, R. V., Bailey, L., Philben, V., Dirbas, F. M., Stockdale, F. E., Carlson, R. W., Jeffrey, S. S.
AMER SOC CLINICAL ONCOLOGY.2006: 10S-10S
- **Nonparametric supervised learning by linear interpolation with maximum entropy** *IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE*
Gupta, M. R., Gray, R. M., Olshen, R. A.
2006; 28 (5): 766-781
- **Systematic review: A century of inhalational anthrax cases from 1900 to 2005** *ANNALS OF INTERNAL MEDICINE*
Holty, J. E., Bravata, D. M., Liu, H., Olshen, R. A., McDonald, K. M., Owens, D. K.
2006; 144 (4): 270-280
- **Modeling GFR trajectories in diabetic nephropathy** *35th Annual Meeting of the American-Society-of-Nephrology*
Lemley, K. V., Boothroyd, D. B., Blouch, K. L., Nelson, R. G., Jones, L. I., Olshen, R. A., Myers, B. D.
AMER PHYSIOLOGICAL SOC.2005: F863-F870
- **Vector quantization of amino acids: Analysis of the HIV V3 loop region** *JOURNAL OF STATISTICAL PLANNING AND INFERENCE*
Olsen, A. B., Cosman, P. C., Rodrigo, A. G., Bickel, P. J., Olshen, R. A.
2005; 130 (1-2): 277-298
- **Who is most likely to benefit from tPA? The perfusion-diffusion and clinical-diffusion mismatch models disagree** *30th International Stroke Conference*
Lansberg, M. G., Thijs, V. N., Bammer, R., Wechsler, L. R., O'Donnell, M. J., Olshen, R. A., Wijman, C. A., Kemp, S. M., Albers, G. W.
LIPPINCOTT WILLIAMS & WILKINS.2005: 437-37
- **Signature pattern of circulating chemokines can improve the identification of coronary artery disease** *41st Annual Meeting of the European-Association-for-the-Study-of-Diabetes*
Ardigo, D., Tabibiazar, R., Olshen, R., Tsao, P. S., Quetermous, T.
SPRINGER.2005: A406-A407
- **Single nucleotide polymorphisms in protein tyrosine phosphatase 1 beta (PTPN1) are associated with essential hypertension and obesity** *HUMAN MOLECULAR GENETICS*
Olivier, M., Hsiung, C. A., Chuang, L. M., Ho, L. T., Ting, C. T., Bustos, V. I., Lee, T. M., de Witte, A., CHEN, Y. D., Olshen, R., Rodriguez, B., Wen, C. C., Cox, et al
2004; 13 (17): 1885-1892
- **Canadian interdisciplinary core curriculum for musculoskeletal health - The rheumatologist perspective.** *68th Annual Scientific Meeting of the American-College-of-Rheumatology/39th Annual Scientific Meeting of the Association-of-Rheumatology-Health-Professionals*
Wadey, V. M., Tang, A., Olshen, R., Walker, D.
WILEY-BLACKWELL.2004: S475-S475
- **Tree-structured supervised learning and the genetics of hypertension** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Huang, J., Lin, A., Narasimhan, B., Quertermous, T., Hsiung, C. A., Ho, L. T., Grove, J. S., Olivier, M., Ranade, K., Risch, N. J., Shen, R. A.
2004; 101 (29): 10529-10534
- **Tree-structured supervised learning and the genetics of hypertension** *Proc Natl Acad Sci USA*
Huang J, Lin A, Narasimhan B, Quertermous T, Hsiung CA, ... , Risch NJ, Olshen RA
2004; 101 (29): 10529-10534
- **Combined analysis of genomewide scans for adult height: results from the NHLBI family blood pressure program** *EUROPEAN JOURNAL OF HUMAN GENETICS*
Wu, X. D., Cooper, R. S., Boerwinkle, E., Turner, S. T., Hunt, S., Myers, R., Olshen, R. A., Curb, D., Zhu, X. F., Kan, D. H., Luke, A.
2003; 11 (3): 271-274
- **Loss of GFR in type 2 diabetic Pima Indians with albuminuria detected at screening.**
Lemley, K. V., Boothroyd, D. B., Blouch, K., Nelson, R. G., Lois, J., Olshen, R. A., Myers, B. D.
AMER SOC NEPHROLOGY.2002: 645A-645A

- **Risk estimation for classification trees** *JOURNAL OF COMPUTATIONAL AND GRAPHICAL STATISTICS*
Bloch, D. A., Olshen, R. A., Walker, M. G.
2002; 11 (2): 263-288
- **Genetic variation in aldosterone synthase predicts plasma glucose levels** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Ranade, K., Wu, K. D., Risch, N., Olivier, M., Pei, D., Hsiao, C. F., Chuang, L. M., Ho, L. T., Jorgenson, E., Pesich, R., CHEN, Y. D., Dzau, V., Lin, et al
2001; 98 (23): 13219-13224
- **A conversation with Leo Breiman** *STATISTICAL SCIENCE*
Olshen, R.
2001; 16 (2): 184-198
- **Multiresolution image classification by hierarchical modeling with two-dimensional hidden Markov models** *IEEE TRANSACTIONS ON INFORMATION THEORY*
Li, J., Gray, R. M., Olshen, R. A.
2000; 46 (5): 1826-1841
- **Intracellular reduction of selenite into glutathione peroxidase. Evidence for involvement of NADPH and not glutathione as the reductant** *MOLECULAR AND CELLULAR BIOCHEMISTRY*
Bhamre, S., Nuzzo, R. L., Whitin, J. C., Olshen, R. A., Cohen, H. J.
2000; 211 (1-2): 9-17
- **Do patient characteristics explain practice variability in the diagnosis and treatment of febrile infants?**
Bergman, D. A., PANTELL, R. H., Lin, A., Mayer, M., Olshen, R., Wasserman, R. C.
NATURE PUBLISHING GROUP.2000: 174A-174A
- **Analysis of single nucleotide polymorphisms in candidate genes for hypertension and insulin resistance.**
Olivier, M., Sheu, H. H., Jeng, C. Y., Hsiao, C. F., Tseng, Y. Z., Ranade, K., CHEN, Y. D., Olshen, R., Curb, D., Pratt, R., Jarvis, N., Indig, M. D., Risch, et al
CELL PRESS.1999: A438-A438
- **PAH extraction and estimation of plasma flow in human postischemic acute renal failure.** *American journal of physiology. Renal physiology*
Corrigan, G., Ramaswamy, D., Kwon, O., Sommer, F. G., Alfrey, E. J., Dafoe, D. C., Olshen, R. A., Scandling, J. D., Myers, B. D.
1999; 277 (2): F312-F318
- **Joint image compression and classification with vector quantization and a two dimensional hidden Markov model** *Data Compression Conference (DCC 99)*
Li, J., Gray, R. M., Olshen, R.
I E E E, COMPUTER SOC PRESS.1999: 23-32
- **Empirically defined health states for depression from the SF-12** *HEALTH SERVICES RESEARCH*
Sugar, C. A., Sturm, R., Lee, T. T., Sherbourne, C. D., Olshen, R. A., Wells, K. B., Lenert, L. A.
1998; 33 (4): 911-928
- **Medical image compression and vector quantization** *STATISTICAL SCIENCE*
Perlmutter, S. M., Cosman, P. C., Tseng, C. W., Olshen, R. A., Gray, R. M., Li, K. C., Bergin, C. J.
1998; 13 (1): 30-53
- **Quantization, classification, and density estimation for Kohonen's Gaussian mixture** *Data Compression Conference*
Gray, R. M., Perlmutter, K. O., Olshen, R. A.
I E E E, COMPUTER SOC PRESS.1998: 63-72
- **Vector quantization and density estimation** *International Conference on Compression and Complexity of Sequences*
Gray, R. M., Olshen, R. A.
I E E E, COMPUTER SOC PRESS.1998: 172-193
- **A criterion for model selection using minimum description length** *International Conference on Compression and Complexity of Sequences*
Najmi, A., Olshen, R. A., Gray, R. M.
I E E E, COMPUTER SOC PRESS.1998: 204-214
- **Management and lesion detection effects of lossy image compression on digitized mammograms** *4th International Workshop on Digital Mammography*

- Betts, B. J., Aiyer, A., Li, J., Ikeda, D., Birdwell, R., Gray, R. M., Olshen, R. A.
SPRINGER.1998: 449-456
- **Modeling of progressive glomerular injury in humans with lupus nephritis** *AMERICAN JOURNAL OF PHYSIOLOGY-RENAL PHYSIOLOGY*
Buckheit, J. B., Olshen, R. A., Blouch, K., Myers, B. D.
1997; 273 (1): F158-F169
 - **Image quality in lossy compressed digital mammograms** *SIGNAL PROCESSING*
Perlmutter, S. M., Cosman, P. C., Gray, R. M., Olshen, R. A., Ikeda, D., Adams, C. N., Betts, B. J., Williams, M. B., Perlmutter, K. O., Li, J., Aiyer, A., Fajardo, L., Birdwell, et al
1997; 59 (2): 189-210
 - **Covariability of V3 loop amino acids** *AIDS RESEARCH AND HUMAN RETROVIRUSES*
Bickel, P. J., Cosman, P. C., Olshen, R. A., Spector, P. C., Rodrigo, A. G., Mullins, J. I.
1996; 12 (15): 1401-1411
 - **Bayes risk weighted vector quantization with posterior estimation for image compression and classification** *IEEE TRANSACTIONS ON IMAGE PROCESSING*
Perlmutter, K. O., Perlmutter, S. M., Gray, R. M., Olshen, R. A., OEHLER, K. L.
1996; 5 (2): 347-360
 - **Termination and continuity of greedy growing for tree structured vector quantizers** *IEEE Transactions on Information Theory*
Olshen RA., Nobel AB
1996
 - **Predictive vector quantization with ridge regression** *6th Data Compression Conference (DCC 96)*
Nash, C. L., Olshen, R. A., Gray, R. M.
IEEE, COMPUTER SOC PRESS.1996: 310-319
 - **Evaluating quality and utility of digital mammograms and lossy compressed digital mammograms** *3rd International Workshop on Digital Mammography*
Adams, D. N., Aiyer, A., Betts, B. J., Li, J., Cosman, P. C., Perlmutter, S. M., Williams, M., Perlmutter, K. O., Ikeda, D., Fajardo, L., Birdwell, R., Daniel, B. L., Rossiter, et al
ELSEVIER SCIENCE PUBL B V.1996: 169-176
 - **Text segmentation in mixed-mode images using classification trees and transform tree-structured vector quantization** *1996 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 96)*
Perlmutter, K. O., Chaddha, N., Buckheit, J. B., Gray, R. M., Olshen, R. A.
IEEE.1996: 2231-2234
 - **Termination and continuity of greedy growing for tree-structured vector quantizers** *IEEE TRANSACTIONS ON INFORMATION THEORY*
Nobel, A. B., Olshen, R. A.
1996; 42 (1): 191-205
 - **PRUNED TREE-STRUCTURED VECTOR QUANTIZATION OF MEDICAL IMAGES WITH SEGMENTATION AND IMPROVED PREDICTION** *IEEE TRANSACTIONS ON IMAGE PROCESSING*
Poggi, G., Olshen, R. A.
1995; 4 (6): 734-742
 - **WAVELET SHRINKAGE - ASYMPTOPIA - DISCUSSION** *JOURNAL OF THE ROYAL STATISTICAL SOCIETY SERIES B-METHODOLOGICAL*
Speckman, P. L., Marron, J. S., Silverman, B., Nason, G., Wang, K. M., Seifert, B., Gasser, T., EFROMOVITCH, S., Nussbaum, M., Wang, Y. Z., VONSACHS, R., Brillinger, D. R., Neumann, et al
1995; 57 (2): 337-369
 - **Evaluating quality and utility in digital mammography** *IEEE International Conference on Image Processing*
Gray, R. M., Olshen, R. A., Ikeda, D., Cosman, P. C., Perlmutter, S., Nash, C., PERLMUTTER, K.
IEEE COMPUTER SOC.1995: B5-B8
 - **BAYES RISK WEIGHTED VECTOR QUANTIZATION WITH CART ESTIMATED CLASS POSTERIORES** *1995 International Conference on Acoustics, Speech, and Signal Processing*
Perlmutter, K. O., Gray, R. M., Olshen, R. A., Perlmutter, S. M.
IEEE.1995: 2435-2438

- **PREDICTING HIGH-RISK CHOLESTEROL LEVELS** *INTERNATIONAL STATISTICAL REVIEW*
Garber, A. M., Olshen, R. A., Zhang, H. P., Venkatraman, E. S.
1994; 62 (2): 203-228
- **EVALUATING QUALITY OF COMPRESSED MEDICAL IMAGES - SNR, SUBJECTIVE RATING, AND DIAGNOSTIC-ACCURACY** *PROCEEDINGS OF THE IEEE*
Cosman, P. C., Gray, R. M., Olshen, R. A.
1994; 82 (6): 919-932
- **EFFECT OF TREATMENT FOR HODGKINS-DISEASE ON PULMONARY-FUNCTION - RESULTS OF A PROSPECTIVE-STUDY** *JOURNAL OF CLINICAL ONCOLOGY*
Horning, S. J., Adhikari, A., Rizk, N., Hoppe, R. T., Olshen, R. A.
1994; 12 (2): 297-305
- **THORACIC CT IMAGES - EFFECT OF LOSSY IMAGE COMPRESSION ON DIAGNOSTIC-ACCURACY** *RADIOLOGY*
Cosman, P. C., Davidson, H. C., Bergin, C. J., Tseng, C. W., Moses, L. E., Riskin, E. A., Olshen, R. A., Gray, R. M.
1994; 190 (2): 517-524
- **Predicting high-risk cholesterol levels** *Intl. Stat. Rev.*
Olshen RA, Garber AM, Zhang H, Venkatraman ES.
1994
- **MEASUREMENT ACCURACY AS A MEASURE OF IMAGE QUALITY IN COMPRESSED MR CHEST SCANS** *1994 IEEE International Conference on Image Processing (ICIP-94)*
Perlmutter, S. M., Tseng, C. W., Cosman, P. C., Li, K. C., Olshen, R. A., Gray, R. M.
IEEE, COMPUTER SOC PRESS.1994: 861-865
- **Evaluating quality of compressed medical images: SNR, subjective rating, and diagnostic accuracy** *Proceedings of the IEEE*
Olshen RA., Cosman PC, Gray RM
1994
- **COMBINING TREE-STRUCTURED VECTOR QUANTIZATION WITH CLASSIFICATION AND REGRESSION TREES** *27th Asilomar Conference on Signals, Systems and Computers*
Gray, R. M., OEHLER, K. L., Perlmutter, K. O., Olshen, R. A.
IEEE, COMPUTER SOC PRESS.1993: 1494-1498
- **PATHOGENESIS OF HYPOFILTRATION IN RAPIDLY PROGRESSIVE MEMBRANOUS NEPHROPATHY (MN)**
Guasch, A., Newton, L., Myers, B. D.
SLACK INC.1992: A112-A112
- **TREE-STRUCTURED VECTOR QUANTIZATION WITH REGION-BASED CLASSIFICATION** *26TH ASILOMAR CONF ON SIGNALS, SYSTEMS AND COMPUTERS*
Perlmutter, S. M., Perlmutter, K. O., Cosman, P. C., Riskin, E. A., Olshen, R. A., Gray, R. M.
IEEE, COMPUTER SOC PRESS.1992: 691-695
- **PROGNOSTIC-SIGNIFICANCE OF HOST HELPER T-CELLS AND PROLIFERATING CELLS IN DIFFUSE SMALL LYMPHOCYTIC LYMPHOMAS - RESULTS OF A TREE-STRUCTURED SURVIVAL ANALYSIS**
Gelb, A., Davis, R., Mo, S., Halpern, J., Olshen, R., Nelson, E., Horning, S., Warnke, R.
NATURE PUBLISHING GROUP.1992: A77-A77
- **PREDICTING CHEMICALLY-INDUCED DUODENAL-ULCER AND ADRENAL NECROSIS WITH CLASSIFICATION TREES** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
GIAMPAOLO, C., Gray, A. T., Olshen, R. A., Szabo, S.
1991; 88 (14): 6298-6302
- **TRAINING SEQUENCE SIZE AND VECTOR QUANTIZER PERFORMANCE** *25TH ASILOMAR CONF ON SIGNALS, SYSTEMS AND COMPUTERS*
Cosman, P. C., Perlmutter, K. O., Perlmutter, S. M., Olshen, R. A., Gray, R. M.
IEEE, COMPUTER SOC PRESS.1991: 434-438
- **DOSE INTENSITY IN THE TREATMENT OF DIFFUSE LARGE-CELL LYMPHOMA - REPLY** *JOURNAL OF CLINICAL ONCOLOGY*
Horning, S. J., Kwak, L. W., Halpern, J., Olshen, R. A.

1990; 8 (11): 1927-1928

- **PROGNOSTIC-SIGNIFICANCE OF ACTUAL DOSE INTENSITY IN DIFFUSE LARGE-CELL LYMPHOMA - RESULTS OF A TREE-STRUCTURED SURVIVAL ANALYSIS** *JOURNAL OF CLINICAL ONCOLOGY*
Kwak, L. W., Halpern, J., Olshen, R. A., Horning, S. J.
1990; 8 (6): 963-977

- **VARIABLE-RATE VECTOR QUANTIZATION OF IMAGES USING DECISION TREES** *24TH ASILOMAR CONF ON SIGNALS, SYSTEMS AND COMPUTERS*
Riskin, E. A., Gray, R. M., Olshen, R. A.
MAPLE PRESS.1990: 319-321

- **THEORETICAL COMPARISON OF BOOTSTRAP CONFIDENCE-INTERVALS - DISCUSSION** *ANNALS OF STATISTICS*
Bai, C. G., Olshen, R. A.
1988; 16 (3): 953-956

- **Classification and Regression Trees** *Wadsworth, Belmont, CA*
Olshen RA, Breiman L, Friedman JH, Stone CJ
1984

- **HOW BROAD IS CLASS OF NORMAL SCALE MIXTURES** *ANNALS OF STATISTICS*
Efron, B., Olshen, R. A.
1978; 6 (5): 1159-1164

- **CONSISTENT NONPARAMETRIC REGRESSION** *ANNALS OF STATISTICS*
Stone, C. J., Bickel, P. J., Breiman, L., Brillinger, D. R., BRUNK, H. D., PIERCE, D. A., Chernoff, H., COVER, T. M., Cox, D. R., Eddy, W. F., Hampel, F., Olshen, R. A., Parzen, et al
1977; 5 (4): 595-645

- **NOTE ON EXCHANGEABLE SEQUENCES** *ZEITSCHRIFT FUR WAHRSCHEINLICHKEITSTHEORIE UND VERWANDTE GEBIETE*
Olshen, R.
1974; 28 (4): 317-321