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# MELODIE JANE HALLETT

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## EXPERIENCE

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### *Lecturer*

- 2001-Present San Diego State University San Diego, CA
- Supervise and instruct students in statistical and computer courses, including Introduction to Statistics, Data Mining, SPSS, SAS, SAS for Econometrics, and Internet Research
  - Provide SPSS coaching and statistical advising to faculty
  - Published a 150 page course reader to assist students with producing graphs, tables, t-tests, One-way ANOVA, and regression with SPSS.
  - Developed a complete Blackboard classroom site including grade book, course notes, online homework, online tests, discussion boards, and data sets.

### *Statistical Consultant*

- 2011 - Present
- Presentation of complex ideas to non-experts.
  - Development and implementation of statistical and data mining techniques
  - Critical review and audit of existing statistical estimates, samples and models.
  - Served as Expert witness for Blood, Hurst and O'Reardon in a class action suit against Urban Outfitters. Completed cluster analysis, merging and data manipulation on several large data sets including shopper data, credit card and store transaction data, July 2016.
  - Developed and created a statistical random sample for evaluation for a pending class action suit, September 2016.
  - Completed correlation and multiple regression analysis for pending litigation, October, 2016.
  - Developed a database and sales prediction model for a division of Blackboard, January 2017.
  - Critical review of survey methodology presented by the insurance industry for legislation relating to reimbursement of consumers for the California Autobody Association, December 2017.
  - Develop and implement statistical methodology and results for PhD students in Psychology at Alliant University, including Multiple Regression, Correlation, Two-way repeated measures ANOVA, ANCOVA, and various other descriptive statistics.

### *Adjunct Instructor*

- 2017 - Present UCSD Extension San Diego, CA
- Instruct and evaluate students in an online graduate level predictive analytics course

### *Adjunct Instructor*

- 2012 DeVry University San Diego, CA
- Instruct and evaluate students in an online graduate level statistics course

### *Assistant Statistician*

- 2011 University of California San Diego La Jolla, CA
- Research associate and statistician for The Autism Center of Excellence (ACE) and Healthy Infant Development Laboratory at UC San Diego within the Department of Neurosciences.
  - Perform logistic regression, Mediation analyses, ANCOVA, MANCOVA and other types of data analysis on cross-sectional and longitudinal data
  - Assist in writing publications detailing the causes of autism, diagnosis and effective treatments on young children.
  - Research is supported through grants from the National Institute of Mental Health under Dr. Eric Courchesne and Dr. Karen Pierce.

**Consultant**

- 2003-2009 San Diego State University Foundation San Diego, CA
- Consultant for survey and statistical methodology and statistical analysis using SPSS, SAS, and Excel.
  - Wrote analytical reports and summaries of findings.
  - Efficiently provided accurate, statistically appropriate output included in analysis plans and reports.
  - August 2003 - Sweetwater Authority public opinion study to measure perceptions of services provided and water related issues. Chi square analysis between key issues and demographic characteristics using SPSS. Descriptive analysis and charts for report.
  - January 2004 – Southern California Regional Rail Authority methodology development to calculate annual passenger trips to fulfill federal reporting requirements and power calculation. Methodology was developed using “Ridership Sampling for Barrier-Free Light Rail” by P.G. Furth, *Transportation Research Record 1402*, 1993.
  - Dec 2007 – June 2009 California Department of Corrections study aimed at reducing return to prison rates. Six separate data bases from different programs. Statistical analysis included trend analysis to detect changes overtime in return to prison rates, and benefit cost analysis to assess fiscal impact of detected changes.

**Adjunct Instructor**

- 2007 Mesa College San Diego, CA
- Supervise , instruct, and evaluate students in statistics course Math 119

**Statistician**

- 2000-2001 Answers Research Solana Beach, CA
- Designed and applied advanced statistical techniques to quantitative studies, including conjoint, segmentation, factor analysis, pricing analysis, cluster analysis, and other multivariate techniques.

**Web Statistical Manager**

- 2000 Change.com Solana Beach, CA
- Developed internet customer experience and site rating surveys.
  - Managed customer incentives.
  - Designed and produced statistical reports
  - Coordinated SAS software installation.
  - Development and utilization of web related statistics.

**Project Director**

- 1998-1999 Information Resources, Inc. Cincinnati, OH
- Consulted with Consumer Packaged Goods clients to assess business issues, create proposals, write reports, create client presentations and make recommendations.
  - Applied statistical models to transaction scanner data to evaluate the volume impact of existing marketing programs and predict the impact of proposed programs.
  - Verified analyses output results, did ad hoc analyses, and exploratory analyses
  - Data cleaning, validation, merging and logic checking
  - Created customized simulation tools to create and test outcomes of consumer promotions.
  - Managed multiple projects simultaneously.
  - Successful application of applied statistical techniques – multivariate regression, forecasting, logistic regression, and market segmentation.
  - Developed a brand level pricing model, and SAS code for the model.
  - Created program documentation for data transformation code

### ***Consumer Test Analyst***

- 1996-1997 Amway Corporation, Research & Development Ada, MI
- Coordinated sensory and consumer tests to provide data and direction for product development decisions across multiple departments.
  - Provided statistical support for research teams including test design, questionnaire design, data analysis, interpretation, presentation, and reporting of results.
  - Tested for significant differences in products using T-tests, ANOVA, and other methods.

### ***Statistical Consultant***

- 1995-1996 Grand Valley State University Allendale, MI
- Part-time research for the Department of Nursing. Processed data using logistic regression.
  - Interpreted the results of surveys concerning smoking and Korean Americans.

## **SKILLS**

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- More than 20 years of experience developing and implementing statistical analysis using the SAS language.
- Technical Skills: SAS , SPSS, R (S-plus), FORTRAN, C, Oracle, SQL, CUDA, Netbeans, AJAX, JAVA, JMP, Minitab, Maple V, DOS, Turbo Pascal, Paradox. Harvard Graphics, UNIX, FTP, Dreamweaver and all Microsoft Office Software
- Statistical techniques: survival analysis, sampling techniques, experimental design, logistic regression, generalized linear models, mixed models, structural equation modeling, data mining, and factor analysis.
- Completed Macro and Advanced Programming courses at the SAS Institute.

## **STRENGTHS**

- Analytical • Precise • Confident • Project Goal-Directed • Strong Interpersonal Skills
- Ability to Meet Deadlines • Excellent Oral and Written Communication Skills • Organized

## **EDUCATION**

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SAN DIEGO STATE UNIVERSITY, San Diego, CA – GPA 3.90/4.00  
PhD Computational Sciences with an Emphasis in Statistics  
Course work included: Data Mining, Database Theory, Computational Methods, Time Series, Seminar: Problems in Computational Science, Nonlinear and Mixed Models, Linear Statistical Models, Computational Methods for Molecular Biology I and II, Numerical Analysis focusing on Operations Research, Discrete Mathematical Models (Operations Research) and Bayesian Statistics, 2015.

MIAMI UNIVERSITY, Oxford, OH GPA – 3.56/4.00  
Master of Science, Statistics, 1998

GRAND VALLEY STATE UNIVERSITY, Allendale, MI GPA – 3.87/4.00  
Bachelor of Science, Statistics, Minor in Business, Graduated Magna Cum Laude, 1996

GRAND RAPIDS COMMUNITY COLLEGE, Grand Rapids, MI GPA – 3.94/4.00  
Associate of Arts, Food and Beverage Management and Culinary Arts, 1992

## **ACADEMIC PROJECTS**

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- **Random Forest Analysis** – May 2009- Student High School Dropout study which examined the underlying causes behind student's decisions for dropping out. The study data was collected by the United States Department of Education, also known as the ICPSR 3955 National Education Longitudinal Study.

- **Bayesian Model** – May 2011- A comparison of Bayesian and Frequentist ANCOVA Methods in detecting the abnormally accelerated development of higher-order long-distance cerebral tracts in autistic infants and toddlers.
- **Mixed Effects Linear Modeling** – December 2010 – This study analyzed the impact of class size on academic achievement.
- **Web-based Database Application** – August 2009 - An Airline Reservation Portal which simulated the basic concepts of an online reservation system, including flight search, an automated ticketing process, and flight status check. The system was PHP front-end, backed by Oracle DB.
- **CUDA/GPU Performance Testing** – October 2009 - This study compared and summarized the performance of two GPU cards, a NVIDIA GeForce GTX 260 and a GeForce 9400GT. Performance testing was done by multiplying two dense matrices of various sizes utilizing Matlab and GPUMat, BLAS and CUBLAS, and general CPU and GPU simple matrix multiplication algorithms.

### PROFESSIONAL AFFILIATIONS

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- National Association of Women in Mathematics
- American Statistical Association (ASA)
- SAS Users Group International (SUGI)

### PUBLICATIONS

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- Courchesne, E., Mouton, P., Calhoun, M., Ahrens-Barbeau, C., Hallett, M.J., Pierce, K. (2011, August 8). *Neuron Number and Size in Prefrontal Cortex of Children with Autism*. Journal of the American Medical Association, 2011 Nov 306(18): 2001-2010.
- Hallett, M.J., Fan, J., Su, X.G., Levine, R.A., Nunn, M.E. *Random Forest and Variable Importance Rankings for Correlated Survival Data with Applications to Tooth Loss*. Statistical Modeling, 2014 Dec 14(6): 523-549.
- Calhoun, P., Hallett, M.J., Fan, J., Su, X.G., Levine, R.A., and Cafri, G. *Random forest with acceptance-rejection trees*. Computational Statistics, 2019 Oct 29, <https://doi.org/10.1007/s00180-019-00929-4>

### MANUSCRIPTS IN PROGRESS

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- Hallett, M.J., Courchesne, E., Pierce, K., Thompson, W., Eyler, L., Solso, S., (2011, September 1). *Detecting the abnormally accelerated development of higher-order long-distance cerebral tracts in ASD infants and toddlers*. Manuscript in progress.
- Hallett, M.J., Fan, J., Su, X.G., Levine, R.A., Nunn, M.E. (2014, July 1). *Random Forest with Completely Randomized Splitting Rules and Likelihood Based Acceptance-Rejection Criteria*. Manuscript in progress.
- Hallett, M.J., Fan, J., Su, X.G., Levine, R.A., Nunn, M.E. (2015, Jan 1). *Identification of Prognostic Indicators for Tooth Loss using Random Forest with Completely Randomized Splitting Rules*. Manuscript in progress.

## **ABSTRACTS, POSTERS AND PRESENTATIONS AT PROFESSIONAL CONFERENCES AND WORKSHOPS**

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- “Unbiased Variable Importance Rankings for Correlated Survival Data” with Fan, J., Su, X., Nunn, M., and Levine, R., ACSESS for Industry Conference (Applied Computational Science and Engineering Student Support ), March 2013, San Diego, CA. Poster
- “Random Forest and Variable Importance Rankings for Correlated Survival Data” with Fan, J., Su, X., Nunn, M., and Levine, R., ACSESS for Industry Conference (Applied Computational Science and Engineering Student Support ), March 2014, San Diego, CA. Poster
- “Development of Prognostic Indicators based on Multivariate CART for Survival” with Nunn, M. Fan, J., Su, X., and Levine, R., IADR (International Association for Dental Research), June 2014, Cape Town, South Africa. Abstract
- Judge for the ACSESS for Industry Conference (Applied Computational Science and Engineering Student Support ) Poster Competition, March 2017, San Diego, CA.