

## Russell G. Almond

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### Education

**1990** Ph.D. in Statistics, Harvard University.

**1986** A.M. in Statistics, Harvard University.

**1983** B.S. with honors in Mathematics, California Institute of Technology.

### Work Experience

#### Statistical and Computer Science Research

**1999-Present** *Senior Research Scientist*, Educational Testing Service, Research Statistics Group.

**1996-1999** *Research Scientist*, Educational Testing Service, Research Statistics Group.

**1995-1996** *Research Associate*, RRA, Inc.

**1992-1995** *Research Scientist*, StatSci division of MathSoft, Inc. (now Insightful) 1700 Westlake Ave, N, Suit 500, Seattle, WA, 98109.

**1990-1991** *Acting (Visiting) Assistant Professor*, University of Washington, Department of Statistics.

**1987-1989** *Research Assistant* to Professor Arthur P. Dempster, Harvard U. Dept. of Statistics.

**1984-1987** *Research Assistant* to Professor Peter J. Huber, Harvard U. Dept. of Statistics.

**1985-1986** *Statistical Consultant* for U. S. Windpower, Burlington, MA.

**1979-1982** *Student Summer Intern* at Honeywell, Process Control Division, Ft. Washington, PA.

### Teaching

**2005-2007** *Volunteer Mentor with MentorPower, Inc.* Mentored a local high school student working on a science or engineering project.

**2002, 2004, 2006, 2007, 2008, 2009** *NCME Tutorial: Bayesian Networks in Educational Assessment.* Full day tutorial presented jointly with R. Mislevy, D. M. Williamson, and D. Yan.

**Fall, 1996** *Visiting Lecturer*, Department of Statistics, Wharton School of Business, University of Pennsylvania.

**1990-1992** *Acting Assistant Professor*, University of Washington, Department of Statistics.

**1983-1984** *Teaching Fellow* under Professors Arthur Dempster and Willis Davis, Harvard U. Dept. of Statistics.

## Awards

- 2005, ETS** Team award for participation in ICT (Information Communications Technology) Literacy Assessment development team.
- 2003, ETS** Bright Idea Award. (For “Four Process Architecture for Assessment Delivery”, see Almond, Steinberg and Mislevy[2002])
- 2000, NCME** (with Robert J. Mislevy and Linda S. Steinberg) National Council on Measurement in Education Award for Outstanding Scientific or Technical Contribution to Educational Measurement. (For “Evidence-Centered Design, see Mislevy, Steinberg and Almond [2003])
- 1998, ETS** (with Robert J. Mislevy and Linda S. Steinberg) New Product Development Award for Most Outstanding Breakthrough. (For Portal)

## Publications

### Books

- Almond, R. G., R. J. Mislevy, L. S. Steinberg, D. M. Williamson, and D. Yan [In Preparation]**, *Bayesian Networks in Educational Assessment*. Springer, draft in preparation.
- Almond, R. G. [1995]**, *Graphical Belief Modeling*. Chapman and Hall, ISBN 0-412-06661-0.

### Papers in Journals

- Almond, R. G., J. Mulder, L. A. Hemat, and D. Yan [2009a]**, “Bayesian network models for local dependence among observable outcome variables.” *Journal of Educational and Behavioral Statistics*, **34**(4), pp. 491–521.
- Almond, R. G., V. J. Shute, J. S. Underwood, and J.-D. Zapata-Rivera [2009b]**, “Bayesian networks: A teacher’s view.” *International Journal of Approximate Reasoning*, **50**, pp. 450–460.
- van der Gaag, L. and R. Almond [2009]**, “Preface to special issue on Bayesian applications.” *International Journal of Approximate Reasoning*, **50**, p. 415.
- Almond, R., D. Yan, and L. Hemat [2008]**, “Parameter recovery studies with a diagnostic Bayesian network model.” *Behaviormetrika*, **35**(2), pp. 159–185.
- Shute, V. J., E. G. Hansen, and R. G. Almond [2008]**, “You can’t fatten a hog by weighing it - or can you? Evaluating an assessment for learning system called ACED.” *International Journal of Artificial Intelligence in Education*, **18**(4), pp. 289–316.  
URL [http://www.ijaied.org/ijaied/ijaied/abstract/Vol\\_18/Shut%e08.html](http://www.ijaied.org/ijaied/ijaied/abstract/Vol_18/Shut%e08.html)
- Almond, R. G. [2007]**, “Cognitive modeling to represent growth (learning) using Markov decision processes.” *Technology, Instruction, Cognition and Learning (TICL)*, **5**, pp. 313–324.  
URL <http://www.oldcitypublishing.com/TICL/TICL.html>
- Almond, R. G., L. V. DiBello, B. Moulder, and J.-D. Zapata-Rivera [2007]**, “Modeling diagnostic assessment with Bayesian networks.” *Journal of Educational Measurement*, **44**(4), pp. 341–359.
- Sinharay, S. and R. G. Almond [2007]**, “Assessing fit of cognitively diagnostic models—a case study.” *Educational and Psychological Measurement*, **67**(2), pp. 239–257.
- Williamson, D. M., R. J. Mislevy, and R. G. Almond [2004]**, “Evidence-centered design for certification and licensure.” *CLEAR Exam Review*, **14**, pp. 14–18.

- Mislevy, R. J., L. S. Steinberg, and R. G. Almond [2003], "On the structure of educational assessment (with discussion)." *Measurement: Interdisciplinary Research and Perspective*, **1**(1), pp. 3–62.
- Almond, R. G., L. S. Steinberg, and R. J. Mislevy [2002], "Enhancing the design and delivery of assessment systems: A four-process architecture." *Journal of Technology, Learning, and Assessment*, **1**, p. (online).  
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- Mislevy, R. J., R. G. Almond, and L. S. Steinberg [2002], "Design and analysis in a task-based language assessment." *Language Testing*, **19**(4), pp. 477–496.
- Almond, R., C. Lewis, J. Tukey, and D. Yan [2000], "Displays for comparing a given state to many others." *The American Statistician*, **54**, pp. 89–93.
- Almond, R. G. and R. J. Mislevy [1999], "Graphical models and computerized adaptive testing." *Applied Psychological Measurement*, **23**, pp. 223–238.
- Mislevy, R., L. Steinberg, F. Breyer, R. Almond, and L. Johnson [1999], "A cognitive task analysis, with implications for designing a simulation-based assessment system." *Computers and Human Behavior*, **15**, pp. 29–42.
- Madigan, D., K. Mosurski, and R. Almond [1997], "Graphical explanation in belief networks." *Journal of Computational Graphics and Statistics*, **6**(2), pp. 160–181.  
URL <http://www.amstat.org/publications/jcgs/index.cfm?fusea%ction=madiganjun>
- Martz, H. and R. Almond [1997], "Using higher-level failure data in fault tree quantification." *Reliability Engineering and Safety Systems*, **56**, pp. 29–42.
- Almond, R. [1995], "Fuzzy logic: Better science or better engineering." *Technometrics*, **37**(147), pp. 267–270, comment to M. Laviolette, J.W. Seaman, Jr., J.D. Barrett and W.H. Woodall, A probabilistic and statistical view of fuzzy methods.
- Almond, R. G. [1991], "Building blocks for graphical belief models." *Journal of Applied Statistics*, **18**, pp. 63–76.
- Almond, R. G. [in press], "I can name that Bayesian network in two matrixes'." *International Journal of Approximate Reasoning*.  
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## Papers in Edited Collections

- Mislevy, R. J., L. S. Steinberg, R. G. Almond, and J. F. Lukas [2006], "Concepts, terminology and basic models of evidence-centered design." In D. M. Williamson, R. J. Mislevy, and I. I. Bejar (Eds.), *Automated Scoring of Complex Tasks in Computer-Based Testing*, Lawrence Erlbaum Associates, pp. 15–47.
- Williamson, D. M., R. G. Almond, R. J. Mislevy, and R. Levy [2006], "An application of Bayesian networks in automated scoring of computerized simulation tasks." In D. M. Williamson, R. J. Mislevy, and I. I. Bejar (Eds.), *Automated Scoring of Complex Tasks in Computer-Based Testing*, Lawrence Erlbaum Associates, pp. 201–257.
- Frase, L., M. Chudorow, R. Almond, J. Burstein, K. Kukich, R. Mislevy, L. Steinberg, and K. Singley [2003], "Technology and assessment." In H. O'Neil and R. Perez (Eds.), *Technology applications in assessment: A learning view*, Erlbaum, pp. 213–244.

- Mislevy, R. J., L. Steinberg, R. Almond, G. Haertel, and W. Penuel [2003], "Leverage points for improving educational assessment." In B. Means and G. Haertel (Eds.), *Evaluating the Effects of Technology in Education*, Earlbaum, pp. 149–180.
- Almond, R. G., L. S. Steinberg, and R. J. Mislevy [2002], "A framework for reusing assessment components." In H. Yanai, O. A., K. Shigemasu, Y. Kano, and J. J. Meulman (Eds.), *New Developments in Psychometrics*, Springer, pp. 281–288.
- Mislevy, R. J., L. S. Steinberg, and R. G. Almond [2002], "On the roles of task model variables in assessment design." In S. Irvine and P. Kyllonen (Eds.), *Generating items for cognitive tests: Theory and practice*, Erlbaum, pp. 97–128.
- Almond, R., L. Dibello, F. Jenkins, R. Mislevy, D. Senturk, L. Steinberg, and D. Yan [2001], "Models for conditional probability tables in educational assessment." In T. Jaakkola and T. Richardson (Eds.), *Artificial Intelligence and Statistics 2001*, Morgan Kaufmann, pp. 137–143.
- Williamson, D. M., R. J. Mislevy, and R. G. Almond [2000], "Model criticism of Bayesian networks with latent variables." In C. Boutilier and M. Goldszmidt (Eds.), *Uncertainty in Artificial Intelligence 16*, Morgan Kaufmann, pp. 634–643.
- Almond, R., E. Herskovits, R. Mislevy, and L. Steinberg [1999], "Transfer of information between system and evidence models." In D. Heckerman and J. Whittaker (Eds.), *Artificial Intelligence and Statistics 99*, pp. 181–186.
- Almond, R. G. [1999], "Undoing statistical advice." In D. Hand, J. Kok, and M. Berthold (Eds.), *Advances in Intelligence Data Analysis*, Springer, pp. 357–368.
- Mislevy, R. J., R. G. Almond, D. Yan, and L. S. Steinberg [1999], "Bayes nets in educational assessment: Where the numbers come from." In K. B. Laskey and H. Prade (Eds.), *Uncertainty in Artificial Intelligence '99*, Morgan-Kaufmann, pp. 437–446.
- Madigan, D. and R. Almond [1995], "Test selection strategies for belief networks." In D. Fisher and H. Lenz (Eds.), *Learning from Data: AI and Statistics V*, Springer-Verlag, pp. 89–98.
- Almond, R., J. Bradshaw, and D. Madigan [1994], "Reuse and sharing of graphical belief network components." In P. Cheeseman and W. Oldford (Eds.), *Selecting Models from Data: Artificial Intelligence and Statistics IV*, Springer-Verlag, pp. 113–122.  
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- Madigan, D., A. E. Raftery, J. C. York, J. M. Bradshaw, and R. G. Almond [1994a], "Strategies for graphical model selection." In P. Cheeseman and W. Oldford (Eds.), *Selecting Models from Data: Artificial Intelligence and Statistics IV*, Springer-Verlag, pp. 91–100.
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- Almond, R. G. [1993], "Lack of information based control in expert systems." In D. Hand (Ed.), *Artificial Intelligence Frontiers in Statistics: AI and Statistics III*, Chapman and Hall, pp. 82–89.
- Almond, R. G. [(in press)], *The International Encyclopedia of Education*, Elsevier, chapter Graphical Models. 3rd edition.

## Presentations

- Almond, R. G. and A. Lipnevich [2009]**, “Value of evidence: A decision theoretic approach to validity for diagnostic assessment.” Paper presented at the 2009 Annual Meeting of the American Educational Research Association (AERA).
- Almond, R. G. and V. J. Shute [2009]**, “Calibration of Bayesian network-based diagnostic assessment.” Paper presented at the 2009 Annual Meeting of the American Educational Research Association (AERA).
- Almond, R. G. [2008a]**, “Evidence-centered design as a tool for thinking about assessment.”, keynote presentation at *Assessment for the 21<sup>st</sup> Century: Insight*. College of Education, Florida State University.
- Almond, R. G. [2008b]**, “Modeling diagnostic assessments with Bayesian networks.”, invited Paper presented at the 2008 Annual Meeting of the Society for Mathematical Psychology.
- Graf, E. A., K. Harris, E. Marquez, and R. Almond [2008]**, “A cognitively based assessment system for mathematics competency.”, presented at the Annual Meeting of the American Educational Research Association (AERA).
- Almond, R. G. [2007]**, “I can name that Bayesian network in two matrixes’.” In K. B. Laskey, S. M. Mahoney, and J. A. Goldsmith (Eds.), *Proceedings of the 5th UAI Bayesian Modelling Applications Workshop*, CEUR Workshop Proceedings, volume 268, p. (online), held in conjunction with the 23rd Conference on Uncertainty in Artificial Intelligence (UAI-2007).  
URL <http://sunsite.informatik.rwth-aachen.de/Publications/C%EUR-WS/Vol1-268/paper1.pdf>
- Almond, R. G., R. J. Mislevy, and D. Yan [2007]**, “Using anchor sets to identify scale and location of latent variables.”, paper presented at Annual meeting of the National Council on Measurement in Education (NCME).
- Shute, V. J., E. G. Hansen, and R. Almond [2007a]**, “Towards accessible test delivery systems: A small-scale evaluation of a prototype system for improving the accessibility of mathematics tests by individuals with visual disabilities.” Paper Presented at Annual meeting of the National Council on Measurement in Education (NCME).
- Shute, V. J., E. G. Hansen, and R. G. Almond [2007b]**, “Evaluation of ACED: The impact of feedback and adaptivity on learning.” In *Proceedings of the AIED 2007 (Artificial Intelligence and Education) conference*, Los Angeles, CA.
- Almond, R. G. [2006]**, “Cognitive modeling to represent growth (learning) using Markov decision processes.” In *Annual meeting of the American Educational Research Association (AERA)*.
- Almond, R. G., V. J. Shute, J. S. Underwood, and J.-D. Zapata-Rivera [2006]**, “Bayesian networks: A teacher’s view.” In *Proceedings of the 4th Bayesian Modelling Applications Workshop*, held in conjunction with the 22nd Conference on Uncertainty in Artificial Intelligence (UAI-2006).
- Ye, F., R. Almond, and R. Mislevy [2006]**, “Diagnostic assessment of student learning of patterns in 8th grade math classes: an evidence-centered design approach.”, paper presented at Annual meeting of the National Council on Measurement in Education (NCME).
- Almond, R. G. and J. Mulder [2005]**, “Models for local dependence among observable outcome variables.” In *Third Annual Bayesian Application Workshop at the 2005 Uncertainty in Artificial Intelligence Application Workshop*.
- Yan, D. and R. Almond [2005]**, “Using ROC curves to improve evidence for diagnostic scoring.” In *Third Annual Bayesian Application Workshop at the 2005 Uncertainty in Artificial Intelligence Application Workshop*.

- Almond, R., L. Hemat, J. Zapata-Rivera, and D. Williamson [2004]**, “Procrustean method for reconciling expert opinion.” In *2nd Bayesian Application Workshop at Uncertainty in Artificial Intelligence*.
- Katz, I. R., D. M. Williamson, H. L. Nadelman, I. Kirsch, R. G. Almond, P. L. Cooper, M. L. Redman, and D. Zapata [2004]**, “Assessing information and communications technology literacy for higher education.” In *International Association for Educational Assessment*.
- Ye, F., R. Almond, R. Mislevy, and D. Yan [2004]**, “Sensitivity to prior distributions in calibration of a Bayesian network.” In *Annual meeting of the National Council on Measurement in Education*.
- Almond, R., D. Williamson, and D. Yan [2003]**, “Testing tests: Quality control for assessment design.” In *1st Bayesian Application Workshop at Uncertainty in Artificial Intelligence*.
- Almond, R., L. Steinberg, and R. Mislevy [2001]**, “The four process assessment delivery architecture.” In *Cognition and Assessment: Theory to Practice*, University of Maryland.
- Almond, R. G. [2001]**, “Question and test interoperability in the new millenium.” In *International Meeting of the Psychometric Society*.
- Smythe, C. and R. Almond [2001]**, “The QTI framework for sharing assessment data and results.” In *International Meeting of the Psychometric Society*.
- Breyer, F., R. Mislevy, L. Steinberg, and R. Almond [1999]**, “Designing technology-based assessments: It’s the evidence for the inferences that are important.” In *Annual Convention of the Society for Industrial Organizational Psychology*.
- Mislevy, R., R. Almond, and L. Steinberg [1999]**, “Evidentiary considerations in performance assessment.” In *Annual Meeting of the National Council on Measurement in Education*.
- Almond, R., R. Mislevy, and L. Steinberg [1998]**, “A multivariate framework for educational testing.” In *Taipei Interanational Statistics Symposium*.
- Mislevy, R., L. Steinberg, and R. G. Almond [1998]**, “Evidence-centered assessment design.” In *Annual Conference of the National Center for Research on Evaluation, Standards, Student Testing (CRESST)*.
- Mislevy, R., R. Almond, and L. Steinberg [1997]**, “Task design, student modeling, and evidentiary reasoning in complex educational assessments.” In *Section on Bayesian Statistical Science at the Annual Meeting of the American Statistical Association*.
- Almond, R. G. [1996]**, “Intelligent support of secondary data analysis.” In *6th International Workshop on AI and Statistics*.
- Bradshaw, J., C. Chapman, K. Sullivan, R. Almond, D. Madigan, D. Zarley, J. Gavrin, J. Nims, and N. Bush [1993]**, “Ks-3000: an application of DDUCKS to bonemarrow transplant patient support.” In *Proceedings of the Sixth Annual Florida AI Research Symposium (FLAIRS '93)*, pp. 78–83.  
URL <http://pages.cpsc.ucalgary.ca/~gaines/BooseBradshaw/EKA%W93KS-3000.doc>
- Almond, R. G. [1990]**, “Breaking dependence in graphical belief models.” In C. Page and R. LaPage (Eds.), *Computing Science and Statistics: Proceedings of the 22nd Symposium on the Interface*, Springer-Verlag, pp. 296–299.
- Almond, R. G. [1988]**, “Fusion and propagation in graphical belief models.” In E. J. Wegman, D. T. Gantz, and J. J. Miller (Eds.), *Computing Science and Statistics: Proceedings of the 20th Symposium on the Interface*., American Statistical Association, pp. 365–370.  
URL <http://ralmond.net/pubs/captain.pdf>

## Selected Technical Reports

- Almond, R. G. [2009]**, “Estimating parameters of periodic assessment models.” Research Memorandum To appear.
- Almond, R. G. [2007]**, “An illustration of the use of Markov decision processes to represent student growth (learning).” Research Report RR-07-40, ETS.  
URL <http://www.ets.org/Media/Research/pdf/RR-07-40.pdf>
- Shute, V. J., E. G. Hansen, and R. G. Almond [2007]**, “An assessment for learning system called ACED: The impact of feedback and adaptivity on learning.” Research Report RR-07-26, ETS.  
URL <http://www.ets.org/research/researcher/RR-07-26.html>
- Almond, R. G., J. Mulder, L. A. Hemat, and D. Yan [2006a]**, “Models for local dependence among observable outcome variables.” ETS Research Report RR-06-36, Educational Testing Service.  
URL <http://www.ets.org/research/researcher/RR-06-36.html>
- Almond, R. G., D. Yan, A. Matukhin, and D. Chang [2006b]**, “StatShop testing.” ETS RM 06-04, Educational Testing Service.
- Mislevy, R., R. Almond, and J. Lukas [2004]**, “A brief introduction to evidence-centered design.” CSE Technical Report 632, The National Center for Research on Evaluation, Standards, Student Testing (CRESST), also ETS Research Report RR-03-16.  
URL <http://www.cresst.org/reports/r632.pdf>
- Sinharay, S., R. G. Almond, and D. Yan [2004]**, “Assessing fit of models with discrete proficiency variables in educational assessment.” Research Report RR-04-07, Educational Testing Service.  
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- Yan, D., R. G. Almond, and R. J. Mislevy [2004]**, “Comparison of two models for cognitive diagnosis.” Research Report RR-04-02, Educational Testing Service.  
URL <http://www.ets.org/research/researcher/RR-04-02.html>
- Steinberg, L., R. Almond, A. Baird, C. Cahallan, H. Chernick, L. Dibello, A. Kindfield, R. Mislevy, D. Senturk, and D. Yan [2003]**, “Introduction to the Biomass project: An illustration of evidence-centered assessment design and delivery capability.” CSE Report 609, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).  
URL <http://www.cse.ucla.edu/reports/R609.pdf>
- Yan, D., R. J. Mislevy, and R. G. Almond [2003]**, “Design and analysis in a cognitive assessment.” Research Report RR-03-32, Educational Testing Service.  
URL <http://www.ets.org/research/researcher/RR-03-32.html>
- Almond, R. G. [2002]**, “Using evidence models to aggregate information.”, white Paper developed for ONR call for suggestions about the future of assessment.  
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- Mislevy, R. J., R. G. Almond, L. DiBello, F. Jenkins, L. S. Steinberg, D. Yan, and D. Senturk [2002]**, “Modeling conditional probabilities in complex educational assessments.” CSE Technical Report 580, The National Center for Research on Evaluation, Standards, Student Testing (CRESST), numerical example for testing Ergo.  
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**Almond, R. [1995a]**, "Hypergraph grammars for knowledge based model construction.", StatSci Research Report 23.  
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**Almond, R. G. [1995b]**, "Capturing reliability knowledge in Graphical-Belief.", StatSci Research Report 31. Presented in special NASA collection.

**Almond, R. G. and J. Schimert [1995]**, "Missing data models as meta-data.", StatSci Research Report 29.

**Almond, R., E. Arbogast, M. Jaisimha, and S. Elston [1994]**, "Intelligent image browsing and feature extraction.", StatSci Research Report 25.

**Almond, R. G. [1994a]**, "Graphical-Belief: Phase II annual report.", SBIR final report.

**Almond, R. G. [1994b]**, "Brushing histories to compare models.", StatSci Research Report 17.  
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**Almond, R. G. and D. Madigan [1993]**, "Using Graphical-Belief to predict risk of coronary artery disease.", StatSci Research Report 19.  
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**Almond, R. G. [1992]**, "An approach to style in data analysis." Technical Report 225, University of Washington, Department of Statistics.  
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**Almond, R. and C.-T. A. Kong [1991]**, "Some heuristics for building an optimal tree of cliques from a graph or hypergraph." Research Report 329, University of Chicago, Department of Statistics, Finn Jensen dubbed the tree produced by this algorithm as the "Almond Tree."  
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**Almond, R. G. [1991]**, "Fiducial inference and belief functions." Technical Report 206, University of Washington, Department of Statistics.  
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**Almond, R. G., R. J. Mislevy, and D. Yan [2007]**, "Using anchor sets to identify scale and location of latent variables.", paper presented at Annual meeting of the National Council on Measurement in Education (NCME).

**Yan, D., R. Almond, and L. Hemat [2005]**, "Bayesian network model for the ICT literacy assessment." Research Report Pending, Educational Testing Service, under Review.

**Almond, R. G., R. J. Mislevy, and D. Yan [Draft]**, "Using anchor sets to identify scale and location of latent variables.", draft in preparation. To be presented at NCME 2007.

*Note: The ETS Research Report and Research Memorandum series are internally refereed.*

## Films

**Almond, R., P. Huber, P. Kempthorne, and L. Roseman [1987]**, “Exploratory multivariate analysis: The crabs data.” Harvard University, 20 min. film.

**Almond, R., P. Huber, E. Ramos, L. Roseman, and M. Thoma [1984]**, “Visual aspects of 3d data graphics: A movie.” Siam Conference on Computers in Statistics, 10 min. film.

## Computer Experience

**Operating Systems** UNIX (Solaris, Sun OS, MacOS X), MacOS, Apollo Aegis, VAX/VMS, Honeywell Multics

**Languages** Java, Lisp, CLOS, C/C++, Fortran, APL, Basic, Pascal, Prolog, Assembler (68000 and 8080), PHP, Perl, Postscript,  $\text{\TeX}$ , XML

**Statistics** S/S-Plus/R, Lisp-Stat, ISP, GLIM, Minitab, IMSL, BUGS

**Techniques** Object-oriented design and analysis, User interface and human factors design (GUI), Artificial Intelligence, Rule-based programming, Constraint-based programming, Graphical Modeling, Language Design, Machine Learning, Neural Networks, and Databases.

## Software Systems Designed

**StatShop** Suite of tools for statistical analysis of Evidence Centered Design models, in particular Bayesian networks. Includes scoring engine (evidence accumulation process), calibrator (MCMC based) and data simulator. All input/output is XML based.

**Asp** Suite of tools written in R for accessing and manipulating StatShop data (both from intermediate databases and XML).

**ACED** (Adaptive Content with Evidence-based Diagnosis) A prototype systems for delivering customized diagnostic assessment. Responsible for task selection algorithm and Bayes net scoring engine (StatShop).

**QTI Specification** Active member of the IMS Global Consortium working group on Question and Test Interoperability. Key contributor to Version 1 XML specification development. <http://www.imslobal.org/question/>

**Evidence Accumulation Process** An open architecture for supporting many possible scoring engines. Including number right and graphical model based scoring. Planned developments include discrete IRT and multivariate IRT models. Runs on Java 1.1 virtual machine (graphical model engine uses Win32 version of Ergo library).

**Four Engine Delivery System** A simple message passing architecture for implementing a modular assessment delivery system. The four processes do not need to be co-resident on the same computer and both which processes are used and the message table can be customized for a particular architecture. Runs on Java 1.1 virtual machine.

**Biomass Prototype Assessment** Lead analyst/developer for a prototype web-delivered High School biology genetics assessment. Processes were implemented in Java, Visual Basic, IIS and Javascript. Includes a drag and drop library written in Java.

**Portal Scoring Engine** Graphical model based scoring system. Runs on Win32 (Windows NT/95/98).

**NAEPVUE** Prototype visual interface for analyzing NAEP data. Includes statistical advice and extensive data encyclopedia.

**Definitions-Doc** Software for extracting project documentation from XLISP-STAT projects.

**GRAPHICAL-BELIEF** Revised and extended version of BELIEF with many new capabilities and graphical user interface. Online (WWW) walk through at:  
URL <http://ralmond.net/gb/index.html>

**ELTOY** Program for eliciting Bayesian conjugate prior distributions through constraint based dynamic graphics. Written in XLISP-STAT. Copies available via StatLib:  
URL <ftp://lib.stat.cmu.edu/xlispstat/eltoy>

**BELIEF** Program to manipulate graphical belief function models written in Common Lisp. Available via Carnegie Mellon Artificial Intelligence Repository:  
URL <http://www.cs.cmu.edu/afs/cs/project/ai-repository/ai/areas/reasonng/probabl/belief/0.html>

## Documentation

**Almond, R. G. and L. A. Hemat [2005]**, “ICT model repository.” ETS Internal Website.  
URL <http://research.ets.org/~ralmond/ICT>

**Hemat, L., R. Almond, and J. Lukas [2005]**, *StatShop Documentation*. Educational Testing Service, Version 2.0 edition, URL is internal to ETS.  
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## Patents

**Almond, R. G., L. S. Steinberg, and Sinharay [Pending]**, “Method and system for calibrating evidence models.” U.S. Patent Application, attorney Docket No. 122467.03601, Pepper Hamilton.

**Steinberg, L. S., R. J. Mislavy, and R. G. Almond [Pending]**, “Portal assessment design system for educational testing.” U.S. Patent application, attorney Docket No. 246400.0159, Wilmer, Culter and Pickering.

## Professional Activities

**Program Chair** 3rd Annual Applications Workshop at Uncertainty in Artificial Intelligence conference, 2005, co-chair in 2006.

**Program Committee** Uncertainty in Artificial Intelligence, 1999, 2000, 2003, 2004; Artificial Intelligence and Statistics, 1997, 1999, 2001.

**Standards Bodies** Working group member for IMS Consortium group on Question and Test Interoperability, 1999–2001.

**Professional Memberships** American Statistical Association, Association for Computing Machinery, American Educational Research Association, and National Council on Measurement in Education.

## Community Service and Other Interests

**2006–2007** Board of Directors of Mentor Power, Inc, a local non-profit, science-based, one-to-one mentor program that instpires, motivates, and empowers under served high school students to develop academic discipline, cirticial thinking and personal responsibility. URL <http://www.mentorpowernj.org/>

**2004–2007** Volunteer mentor with Mentor Power, NJ.

Other personal information including pictures of my twin daughters can be found at: <http://ralmond.net/>.