

BRIAN LUKOFF

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SUMMARY

Educator, researcher, statistician, engineer, and technology designer energized by both high-level design and the nitty-gritty of technical analysis and implementation.

EDUCATION

Ph.D., Learning Sciences and Technology Design September 2010
Stanford University School of Education, Stanford, CA

M.S., Statistics April 2006
Stanford University, Stanford, CA

B.A., Mathematics and College Scholar (*magna cum laude*) May 2004
Cornell University, Ithaca, NY

PROFESSIONAL AND RESEARCH EXPERIENCE

Postdoctoral Fellow, Harvard University, Cambridge, MA 2010 – present
Architected and built Learning Catalytics, a web-based platform that allows students to participate in an interactive classroom using a laptop, smartphone, or tablet; Learning Catalytics enables instructors to pose open-ended questions that go beyond simple multiple-choice questions and uses intelligent data analytics to create a richer interactive experience in the classroom. Worked with another postdoctoral fellow to create an instrument for measuring peer instruction self-efficacy and build models for predicting academic risk. Collaborated with graduate students to investigate alternative measures of conceptual gain in physics and create a new graphical tool for comparing classes.

Software Engineer, adap.tv, San Mateo, CA 2007 – 2010
Architected and implemented what has become an industry-leading analytics system for adap.tv's online video ad management platform; the analytics system has successfully scaled to handle millions of events per day and an analytics data store with billions of rows. Developed an innovative methodology for forecasting buyer outcomes in adap.tv's video marketplace. Collaborated with product management to design analytics features to meet customer and internal reporting needs.

Research Assistant, Stanford University, Stanford, CA 2004 – 2007, 2009 – 2010
Designed and conducted research studies, performed statistical analyses, and wrote papers for projects including:

- *Measuring proficiency of surgeon performance on surgical simulators* – Developed a new regression-based statistical method to score proficiency on surgical simulators, which resulted in a published paper in *Journal of the Society of Laparoendoscopic Surgeons*.
- *Using teachable agents for assessment* – Explored the use of “teachable agents” to gauge student understanding of logical reasoning in biology and health. Co-wrote and presented a paper at the 2006 meeting of the American Educational Research Association, which won a Best Student Paper award.
- *Comparing high-stakes state tests with the low-stakes NAEP* – Worked with a research team to compare trends in achievement gaps over time between state and national-level assessments, which resulted in a published technical report by the National Center for Research on Evaluation, Standards, and Student Testing.

Graduate Student Summer Intern, Educational Testing Service, Princeton, NJ 2006
Developed and evaluated a new method for detecting faking on self-report assessments using decision tree techniques, which led to a paper for the 2007 meeting of the American Psychological Association. Delivered an invited presentation of summer research work at an ETS mini-conference on faking.

TEACHING EXPERIENCE

Lecturer, Department of Mathematics, Harvard University, Cambridge, MA 2011 – present
Taught a section of Math 1a, an introductory calculus course consisting primarily of freshmen and sophomores that is taught completely in sections (with no separate lecture component). Created lessons that combined technology and interactivity with traditional practice to engage students and encourage the development of conceptual understanding. Collaborated with other instructors to develop problem sets and write and grade exams. Worked with the department preceptor group to conduct internal research on curricular issues.

Teaching Assistant, Stanford University, Stanford, CA 2006 – 2007
Served as a teaching assistant for quantitative research courses in the School of Education. Developed lessons that conveyed statistical concepts to undergraduate and graduate students, many of whom did not have a quantitative background. Presented these lessons weekly to sections of 10-30 students using concrete, practical examples to illustrate statistical concepts. Created demonstrations to show how to use statistical software in practice.

- *Education 251B: Statistical Analysis in Educational Research: Analysis of Variance* (Spring 2007)
- *Education 250A/B: Statistical Analysis in Educational Research: Regression* (Winter 2006 and Winter 2007)
- *Education 266X: Workshop in Practical Quantitative Research on Educational Policy and Inequality* (Spring 2006)
- *Education 150: Introduction to Data Analysis and Interpretation* (Fall 2006)

ENTREPRENEURIAL EXPERIENCE

Co-founder and CEO, Learning Catalytics, Brookline, MA 2011 – present
With co-founders Eric Mazur and Gary King, commercialized the Learning Catalytics platform, which began as research conducted at Harvard. Learning Catalytics launched publicly in the summer of 2011 and is now being used by an initial set of instructors at both the secondary and college levels.

Co-founder and Chief Education Scientist, Spatial Thoughtware, Pleasanton, CA 2009 – present
Designed online assessment systems for Algorithmic Geometry, a new high-school geometry curriculum that teaches geometry through Java programming. Developed software to deliver and score innovative item types such as automatically-scored Java code. Collaborated on grant-writing and curriculum development.

PUBLICATIONS AND PRESENTATIONS

- Lukoff, B. (2011). Is Faking Inevitable? Person-level Strategies for Reducing Faking. In Ziegler, M., McCann, C., & Roberts, R. D. (Eds.), *New Perspectives on Faking in Personality Assessments*. Oxford University Press.
- Lukoff, B. & Mazur, E. (2011). Clickers 2.0: Managing Classroom Interactions. Presentation at the 2011 Summer Meeting of the American Association of Physics Teachers, Omaha, NE.
- Lukoff, B. & Tucker, L. (2011). The interactive learning toolkit: technology and the classroom. Presentation at the April 2011 meeting of the American Physical Society, Anaheim, CA.

- Lukoff, B. (2010). *The design and validation of an automatically-scored constructed-response item type for measuring graphical representation skill*. Doctoral dissertation, Stanford University, Stanford, CA.
- Feusner, M. & Lukoff, B. (2008). Testing for Statistically Significant Differences Between Groups of Scan Patterns. Proceedings of the 2008 Symposium on Eye Tracking Research & Applications, 43-46.
- Heinrichs, W. L., Lukoff, B., Youngblood, P., Dev, P., & Shavelson, R. (2007). Criterion-based Training with Surgical Simulators: Proficiency of Experienced Surgeons. *Journal of the Society of Laparoendoscopic Surgeons* 11(3), 273-302.
- Lukoff, B., Heggstad, E., Kyllonen, P. & Roberts, R. (2007). Using Decision Trees to Detect Faking in Noncognitive Assessments. Paper for the 2007 American Psychological Association convention, San Francisco, CA.
- Erickson, V., Ho, A., Holtzman, D., Jaciw, A., Lukoff, B., Shen, X., Wei, X., & Haertel, E. (2007). Closing the Gap? A Comparison of Changes Over Time in White-Black and White-Hispanic Achievement Gaps on State Assessments Versus State NAEP. CSE Report 721, National Center for Research on Evaluation, Standards, and Student Testing, Los Angeles, CA.
- Lukoff, B. (2006). Using Decision Trees to Detect Faking in Noncognitive Assessments. In R. D. Roberts, R. Schulze, & P. C. Kyllonen (chairs), Technical Advisory Committee on Faking on Noncognitive Assessments. Princeton, NJ: ETS.
- Lukoff, B. & Schwartz, D. (2006). Student Assessments without Student Testing: A New Approach Using Teachable Agent Technologies. Paper presented at the 2006 Annual Meeting of the American Educational Research Association, San Francisco, CA.
- Wei, X., Shen, X., Lukoff, B., Ho, A., & Haertel, E. (2006). Using Test Content to Address Trend Discrepancies Between NAEP and California State Tests. Paper presented at the 2006 Annual Meeting of the American Educational Research Association, San Francisco, CA.
- Lukoff, B. & Schrader, D. (2004). Reasoning Through Academic Integrity. Paper presented at the Association for Moral Education 30th Annual Conference, Dana Point, CA.

TECHNICAL SKILLS

- Programming in both academic and professional environments, including extensive work in Ruby on Rails, Java, and Perl, and substantial work in Flash/Flex, PHP, Visual Basic (and VBScript), and ASP.
- Database design and management, including relational databases (MySQL and SQL Server) and specialized databases for analytics (Infobright and SQL Server Analysis Services).
- Statistical analysis, including extensive work with R, Stata, and SPSS.

AWARDS

- Brenda Loyd Dissertation Award from the National Council on Measurement in Education
- Advanced Technologies for Learning/Education, Science, and Technology AERA Special Interest Group Best Student Paper Award
- Phi Beta Kappa
- Merrill Presidential Scholar, awarded to 1% of the graduating class at Cornell University
- Tomasic Prize for undergraduate honors thesis proposal at Cornell University
- Pauline and Irving Tanner Dean's Scholar at Cornell University

PATENT APPLICATIONS

- King, G., Mazur, E., & Lukoff, B. "Participant Grouping for Enhanced Interactive Experience," U.S. provisional patent application 61/480,565, filed 4/2011
- King, G., Mazur, E., & Lukoff, B. "Cluster Analysis of Participant Responses for Test Generation or Teaching," U.S. provisional patent application 61/480,574, filed 4/2011
- King, G., Mazur, E., & Lukoff, B. "Management of Off-Task Time in a Participatory Environment," U.S. provisional patent application 61/480,578, filed 4/2011
- King, G., Mazur, E., & Lukoff, B. "Cross-Classroom and Cross-Institution Item Validation," U.S. provisional patent application 61/480,585, filed 4/2011

UNIVERSITY SERVICE

- Member of Stanford University School of Education Web Council, 2004-2007
- Web/IT representative for Stanford University School of Education student government, 2004-2007