Philip M. Kalina

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SUMMARY

Data scientist/statistician and software developer/manager. Proven problem solver with outstanding analytical and communications skills

SKILLS

- Computer models and statistical analyses
- Computer languages including Java, R, Python
- Data collection and analysis
- Machine learning
- Simulation with intelligent feedback
- Data curation

SELECTED ACCOMPLISHMENTS

- Used R to curate healthcare database and derive outcome indicator. Derived and validated machine learning models to identify patterns of therapeutic effectiveness.
- Built and validated models of NCI mesothelioma data to predict three- and five-year survival.
- Developed and deployed cloud-hosted Tomcat servlets which use Bayesian models to deliver personalized prediction of health outcomes based on individual patient data.
- Testified in Summit County (Ohio) Court of Common Pleas on non-suitability of web-hosted survey results to support closure and sale of Girl Scout camps. (April 2012)
- Built Bayesian model of cost of failure to recognize and treat substance abuse. Used Java and JDBC-ODBC to extract, aggregate, and flatten data from 24 SAS tables (29.7 million records) of MarketScan (now Truven Health) database of 400,000 health insurance enrollees.
- For project for U.S. Dept of Health and Human Services, built ontology of terms relevant to small physician practices; used it to assemble integrated database from 15 surveys. Built and validated model to quantify influence of factors leading to adoption of electronic health record systems.

For Presidential Commission for the Study of Bioethical Issues:

- Aggregated five-year database of 250,000+ projects with federal funding from various source files. Conducted consistency checks. Derived new fields based on links with other tables.
- Advised the commission and completed analyses and reports for their December 2011 report, “Moral Science: Protecting Participants in Human Subjects Research”

For Temple University’s Institute for Survey Research:

- Contributed to proposal development and other research and survey projects including Kuwait Enumeration and Public Health Study for Harvard School of Public Health.
- Led university portion of project to sample and evaluate hazardous waste for subcontractor to U.S. Department of Energy. Our analysis and insights helped avoid dangerous re-excavation of uranium-contaminated scrap, saving $10 million or more.

SELECTED ACCOMPLISHMENTS (continued)

Co-founded Predictive Medicine, Inc., which seeks to apply artificial neural networks and other computer models to select optimal patient-specific therapies and provide early indicators of treatment efficacy. Researched model effectiveness, analyzed data, prepared funding proposals. Helped customer learn, implement, and explain Coarsened Exact Matching algorithm for selecting control sets to test effectiveness of new therapy.

For Research Development Corporation, recruited and led members of engineering staff; managed projects, assuring compliance with user requirements; developed software and other technology and content for stand-alone and web-hosted applications; wrote proposals, status reports, and final reports; researched effectiveness of training techniques and prepared statistical analyses of results; designed and implemented network security plan.

- Collaborated on knowledge engineering; then designed, built, and delivered Java-based radar intercept simulator/trainer with intelligent feedback for U.S. Navy.
- Developed HTML-based problem-solving model and educational game funded by National Science Foundation.
- Directed development of web-hosted education system prototype, which used n-tier model to deliver K-12 content and interactively assess student progress. Pattern matching algorithm tied content to state and local standards. Developed many highly interactive Java applets.

As researcher/adviser for investment firm, explained and improved computer model to manage bond fund. Designed and carried out experiments to improve model, which used ensemble of neural networks to forecast week-to-week changes in long term interest rates. Tracked assignments and progress of research projects. Developed C and C++ software to preprocess input data. Educated staff and clients in neural nets, statistics, fractals, and analytical software.

For Ernst & Young, managed group responsible for healthcare software. My team developed and maintained computer models to optimize nurse staffing based on patient mix, predict and maximize Medicare reimbursement, track actual vs. expected payment, assign optimal procedure codes in medical records, and develop budgets.

For Amherst Associates (now merged into McKesson) designed and implemented forecast functionality of leading decision support tool, used by 500+ hospitals.

EXPERIENCE

Independent Consultant (concurrent with other work) 2005-present

DecisionQ Corporation Washington, D.C.
Director of Computer Modeling 2006 - 2012

Predictive Medicine, Inc. Reston, Virginia, and Shaker Heights, Ohio
Co-founder and Senior Technologist (concurrent with other work) 1997 - present

Presidential Commission for the Study of Bioethical Issues Washington, D.C.
Consultant and Statistician (temporary position, concurrent with other work) 2011-2012

Temple University's Institute for Survey Research (ISR) Washington, D.C.
Director of Data Operations, Washington Office 2003 - 2005

EXPERIENCE (continued)

Research Development Corporation — Herndon, Virginia
Technical Director — 1995 - 2002

Independent Consultant — 1991 - 1995

Ernst & Young — Cleveland, Ohio
Senior Manager — 1988 - 1991

EDUCATION

M.A., Mathematics and Statistics, University of Massachusetts, Amherst, Massachusetts
Taught undergraduate courses: "Statistics for Business" and "Statistics for the Social Sciences"

A.B., Mathematics (with departmental honors), Lehman College, City University of New York

VOLUNTEER WORK

Washington Statistical Society: Board member, former officer, social media producer, member of communications committee

Cleveland Museum of Art: Head monitor for Parade the Circle; volunteer at other events

SELECTED PUBLICATIONS AND REPORTS

Schaub N.P., Alimchandani M., Quezado M., Kalina P.M., et al "A Novel Nomogram for Peritoneal Mesothelioma Predicts Survival," Annals of Surgical Oncology, 2013;20(2)

Steele S., Bilchik A., Eberhardt J., Kalina P., Nissan A., Johnson E., Avital I., Stojadinovic A. "Using Machine-Learned Bayesian Belief Networks to Predict Perioperative Risk of Clostridium Difficile Infection Following Colon Surgery," Interact J Med Res 2012;1(2):e6

Weinstein L., Radano T.A., Jack T., Kalina P.M., Eberhardt J.S. "Application of multivariate probabilistic (Bayesian) networks to substance use disorder risk stratification and cost estimation," Perspectives in Health Information Management, 2009; 6(Fall)

Eberhardt, J.S., Kalina, P.M. "Economic Analysis of Health Information Technology - Computational Economic Model and Simulation Tool, Version 2," Study report for U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation. (June, 2007)

Kalina, P.M., Kollander, M., Smith, W.K., and Sobel, M.J. "Results of Statistical Analysis of Sample Data From Scrap Yards P and P-1 at the Paducah Gaseous Diffusion Plant," Report for the Bechtel Jacobs Company LLC. (2005)

Mage, D.T., Kollander, M., Kalina, P.M. "Bedoons and Others Included as Kuwaitis in the Hospital Admission Data of the Ministry of Health," Report for the National Survey of Kuwaiti Citizens Exposed to Oil Fire Pollution, 7/1/2002 to 7/15/2005. (2005)