Kun Zan

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Education	**PhD, Operations Research and Industrial Engineering**	**August 2013**

The University of Texas at Austin (UT), GPA: 3.9/4.0

Course work

- *Decision Analysis:* Decision Analysis; Markov Decision Process; Decision, Risk, & Reliability
- *Statistics/Probability:* Data Mining; Mathematical Statistics; Bayesian Statistical Models; Applied Probability; Theory of Probability; Applied Stochastic Process; Systems Simulation
- *Optimization:* Pricing and Revenue Management; Linear Programming; Nonlinear Programming; Integer Programming; Stochastic Optimization

M.S., Industrial Engineering	**June 2007**

Huazhong University of Science and Technology (HUST), China

B.S., Mechanical Engineering and Automation	**July 2005**

Beihang University (BUAA) (formerly Beijing University of Aeronautics and Astronautics), China

Experience Related to Decision Analysis

Practicum Course Project, DrillingInfo, Austin, TX   **present**

- Develop a statistical and computational method to predict the unconventional oil and gas production of the undeveloped acreage given observed geological data, using data mining and geostatistics, with a team. This method is developed in R. This project is funded by DrillingInfo, and is joint work with its analytic team.

Graduate Research Assistant, The Center for Petroleum Asset Risk Management, UT   **present**

- Perform risk analysis for Managed Pressure Drilling, funded by Weatherford International. The main work includes probabilistic modeling using influence diagram (or Bayesian belief network), developing higher order conditional dependence structure, sensitivity analysis, and deriving likelihoods of risk as inputs of the model from data sets and from surveying domain experts.
- Dissertation "Value of Information and Portfolio Decision Analysis". Develop mathematical model, investigate properties and optimization issues of value of information (such as the value of seismic test) in portfolio settings, and develop methods of portfolio decision analysis. The tools are mainly decision analysis, dynamic programming, Bayesian inference, Order statistics, probabilistic modeling.

Decision Analyst Intern, US Army Engineer R&D Center (Contracted), Concord, MA   **05/2010 – 08/2010**

- Led a group to develop a five-year dredging plan for a construction company. Developed a multiple-objective network optimization model, fit the inputs by collecting data from large data sets, documents and by consulting experts, and solved it using an open source (GLPK) solver. Presented the results to the client, and secured next phrase funding.
- Built a big decision analysis and Bayesian network model in Excel and developed the algorithm written in VBA to help an environmental company to make device purchase decision. The results impressed the client and secured more funding to develop a more detailed model with data.
- Developed the prototype of a multi-criteria decision analysis and value of information analysis model in Excel, coded with VBA, and solved by Monte Carlo simulation through @Risk, to help a nano material company to allocate the R&D budget. I presented the results in the Society for Risk Analysis Annual Meeting and received the conference Student Award.

Experiences Related to Data Analysis

- Developed a pricing and revenue management model to suggest the optimal quote price for a hotel to maximize its revenue based on given historical data. Logistic regression and nonlinear optimization was used.
- Predicted the frequency of occurrence of several harmful algae in water samples using multiple linear regression. The tasks included data visualization, descriptive statistics, developing strategies to handle unknown variable values, evaluating models through k-fold cross-validation. The analysis was coded in R.

Experience Related to Optimization	• Developed a capacity planning model in the context of warehouse management, using two-stage stochastic linear program with recourse. This problem was modeled and solved in GAMS. • Modeled and solved a scheduling problem in the semiconductor manufacturing system context with multiple machines with dynamic batching capabilities. By optimally assigning jobs to machine and recipe pair, the model achieved the minimal weighted job completion times. This model was developed in GAMS, and solved by CPLEX, and heuristics.

Graduate Research Assistant, Civil Engineering, UT   06/2008 - 08/2008

- Developed a new nonlinear optimization model for a design problem in hydrodynamics. The solving algorithm was coded by Fortran. This new model corrected the errors of a popularly used model. The results improved the efficiency of the design.

Student Engineer Intern, Wuchang Shipyard Co., LTD, China   07/2006 - 09/2006

- Analyzed operations of Manufacturing Department by interviewing engineers, gathering and analyzing data. Found operation bottleneck, and developed math optimization model to solve it.

Computer Skills	**OS**: Windows, Linux **Programming Languages**: C/C++, VBA, Fortran **Software/Package**: R, @RISK, Excel, GAMS, CPLEX, Gurobi, GLPK, Arena , SAS, SQL.
Teaching Experiences	**Teaching Assistant, McCombs School of Business; Operations Research and Industrial Engineering, UT** • Engineering Finance; Elementary Business Statistics; Operations Management; Decision Analysis (graduate course): Gave lectures, led problem sessions, held office hours, and graded assignment.
Publications	1. Kun Zan and J. Eric Bickel. "Components of Value of Information", forthcoming in *Decision Analysis*. 2. Bickel, J. Eric and Kun Zan. "Portfolio value of information: model and properties," Proceedings of 2011 NSF Engineering Research and Innovation Conference, Atlanta, Georgia, January 4-7, 2011. 3. Bickel, J. Eric and Kun Zan. "Resource Allocation and the Value of Information," NSF CMMI Research and Innovation Conference, Honolulu, Hawaii, June 25-29, 2009. 4. Kun Zan. "A Study of Optimum Circulation Distributions for Turbines," Technical Report, Ocean Engineering Group, The University of Texas at Austin, August, 2008. 5. Chi Zhou, Liang Gao, Hai-Bing Gao, and Kun Zan. "Particle Swarm Optimization for Simultaneous Optimization of Design and Machining Tolerances," Lecture Notes in Computer Science, 4247, pp.873-880, 2006.
Invited Talks	1. Kun Zan. "Ranking or Selection?" INFORMS Annual Conference, Charlotte, NC, November 14, 2011. 2. Kun Zan. "Linking VOI and MCDA: Methodology and Application to Portfolio Decisions," Society of Risk Analysis Annual Meeting, Salt Lake City, UT, December 6, 2010. **Received the conference Student Award**. 3. Kun Zan. "Value of Information in the Stochastic 0-1 Knapsack Problem," INFORMS Annual Conference, San Diego, CA, October 13, 2009.
Honors	Warren A. and Alice L. Meyer Endowed Scholarship in Engineering, UT, 2012-2013 David Bruton, Jr. Graduate School Fellowship, UT, 2011-2012 Student Award for the Society for Risk Analysis Annual Meeting, 2010 Graduate Student Professional Development Awards, UT, 2011, 2010, 2009 Awarded Honorary Membership in Omega Rho, INFORMS Honor Society, 2008 The University of Texas Academic Competitive Scholarship, 2007 Outstanding Student of Sichuan Province Award, China (top 1%), 2001
Leadership and Service Activities	**Member,** Institute for Operations Research and Management Science (INFORMS), Decision Analysis Society, INFORMS Sports Section, The Society for Risk Analysis, Society of Decision Professionals, Toastmasters **Volunteer**, the Mechanical Engineering Department Annual Recruiting Visit, 2011, 2010; China earthquake relief even series, 2008; Beijing 2008 Olympic Games showcase on UT campus, 2008; Mitchell Award for Excellence in Graduate Research selection committee, 2008
Interests	Active soccer player; swimmer and runner; World History; Global Economics.