Milovan Krnjajić

Technology professional with expert knowledge spanning statistical modeling, theory of probability, stochastic processes, machine learning, AI. Developed systems for analysis of complex datasets to provide insights and predictions for scientific and business decision making. Positions as university professor, research scientist and technical manager of teams of developers.

- **Core expertise: Statistics and machine learning**: Statistical regression models for prediction and classification; Econometric panel models; Time series models; Design of experiments for hypotheses testing; Bayesian modeling and inference; Markov Chain Monte Carlo (MCMC) simulations; Decision theory; Stochastic optimization. ML algorithms for pattern recognition, clustering, and classification such as ensemble tree-based methods, gradient boosting methods, support vector machines.
- **Education:** Ph.D. Computer Science, University of California at Santa Cruz
  Doctoral Thesis: Contributions to Bayesian non-parametric inference and model choice.
  M.Sc. Computer Science, Rensselaer Polytechnic Institute, New York
  B.Sc. Electrical Engineering, Belgrade University, Belgrade

Teaching and Research

- **Singidunum University, Belgrade** (June 2021 – Oct 2023) Professor, Teaching courses in the areas of Machine Learning, AI, and Statistical Modelling.
- **National University of Ireland, Galway** (2009 – 2014) Stokes Lecturer of Statistics. *Teaching:* Probability Theory; Stochastic Processes; Statistics for Engineers; Introduction to Bayesian Modelling; Introduction to Applied Statistics. *Research:* Bayesian nonparametric inference; stochastic simulation; Bayesian model specification; Time-series forecasting; Inverse models.
- **Lawrence Livermore National Laboratory** (2006 – 2009) Senior research scientist: Development of cost-sensitive classifiers with very low false positive rates; System for nuclear radiation detection; US-VISIT system for Homeland Security; Bayesian analysis of inverse problems with application in event reconstruction. (@Merrill Lynch, NYC, during 2007)
- **University of California at Santa Cruz** (2001–2005). Research work on a Ph.D. thesis in Bayeisan statistics in the areas of Bayesian non-parametric (BNP) inference and model specification. Developed a number of novel statistical statistical models based on Dirichlet process mixtures and implemented MCMC sampling; developed a simulation framework to study model choice based on posterior predictive performance. While at UCSC, I also worked on the following research projects as a paid consultant:
  - NASA, Ames Research Center, Moffett Field, CA. Developed a Bayesian statistical model to analyze clustering in massive satellite image data, for early detection of wild fires.
  - Baylor College of Medicine, Houston, TX. Two projects: (1) analysis and annotation of genomes of newly sequenced organisms; (2) comparative sequence assembly employing human genome to facilitate new genome assembly of other mammals.

Selected High-Tech Industry Experience

- **Maxim Integrated, San Jose, CA** (2016-2020) Director,Data Science Leading development and deployment of statistical models and ML methods (regression models, time-series, boosting and bagging methods to solve forecasting, classification and optimization problems in the areas of demand planning, sales and marketing, in support of data-driven decision making. Interfacing with top management on company-wide advanced analytics

initiatives, presenting solutions and collaborating with stakeholders. Helping expansion of data science function, growth of the core team and mentoring data science staff.

- **eBay, San Jose, CA** (2014-2016) Senior Research Scientist. Development of ML methods and statistical models in anomaly detection, personalized contact strategy in advertising. Statistical support for A/B testing experiments. Econometrics models for analysis of marketing data to optimize multi-channel budget. Research in dynamic pricing models for personalized seller's recommendations.
- **Merrill Lynch** (2007), Global Markets and Investing, New York City. Risk Analytics Group. Developed statistical models for performance analysis, risk assessment, and prediction of defaults and prepayments in pools of consumer loans. The approach was based on competing risks models of survival analysis.

Publications

- M. Krnjajić, R. Maslovskis, (2019) "On some practical approaches of data science applied in forecasting and personalization", *AMSA-2019, Novosibirsk, Russia, 2019*
- Hegde V, Krnjajić M, Pozdnoukhov A, (2015) "Unsupervised Event Detection with an Infinite Poisson Mixture Model", *IEEE BigData Congress, New York City, 2015*
- M. Krnjajić, and D. Draper (2014), "Bayesian model comparison: Log scores and DIC", *Statistics & Probability Letters, 88 (2014) 914.*
- Krnjajić, M. and Draper D. (2013) "Quantifying the price of uncertainty in Bayesian models", *Proceedings of AMSA*, Novosibirsk, Russia
- Krnjajić, M. (2011), Book review: "Bayesian Nonparametrics" by N. L. Hjort, C. Holmes, P. Müller, and S. Walker (eds.) *Journal of the American Statistical Association*, Vol. 106, No. 496, pp 1639–1641, Book Reviews, DOI: 10.1198/jasa.2011.br1112
- Krnjajić, M. and Draper D. (2011) "Bayesian Model Specification: Some problems related to model choice and calibration", *Proceedings of AMSA*, Novosibirsk, Russia
- Kottas, A. and Krnjajić, M. (2009). "Bayesian Nonparametric Modeling in Quantile Regression", *Scandinavian Journal of Statistics*, Vol. 36: Issue 2, p. 297-319
- L.Glascoe, J.Morris, L. Glenn, M.Krnjajic (2009) "Development and Application of a Fast-Running Tool to Characterize Shock Damage within Tunnel Structures", *Proceedings of the Fifth Congress on Forensic Engineering*, http://dx.doi.org/10.1061/41082(362)13
- Krnjajić, M., Kottas, A., and Draper, D. (2008). "Parametric and Nonparametric Bayesian Model Specification: A Case Study Involving Models for Count Data", *Journal of Computational Statistics and Data Analysis* 14, 610-625. Volume 52, Issue 4, 10 January 2008.
- Kottas, A., Krnjajić, M., Taddy, M. (2007). "Bayesian Model-Based Approaches to Semiparametric and Nonparametric Quantile Regression", *Proceedings Joint Statistical Meetings*, Salt Lake City, Utah.
- Jurka, J., Krnjajic, M., et. al (2002). "Active ALU elements are passed primarily through paternal germlines", *Theoretical Population Biology* 61:519-530.

Miscellaneous

- Reviewer for *National Science Foundation, USA*; *Journal of Royal Statistical Society, Series B*; *Journal of American Statistical Association*; *Computational Statistics and Data Analysis*; *Biometrics*; *Statistics and Computing*; *Annals of Applied Statistics.*