CESAR ACOSTA

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More than 10 years of experience analyzing highly complex data, building advanced data mining models to predict market outcomes useful to improve decision making in Marketing Analytics, Financial investing, and business operations analytics. Outstanding skills to finding insights for problem solving and process optimization.

EDUCATION

- Ph.D. Statistics, The University of Texas at Dallas · Ph.D. Industrial Engineering, Texas A&M University
- MBA, ITESM Campus Ciudad de Mexico · B.S. Industrial Engineering, Catholic University of Peru

EXPERIENCE

- Data Scientist Consultant *2013 - present*
- USC, Viterbi School of Engineering, MS Analytics, program director *2018 - 2024*
- USC, Viterbi School of Engineering, MS Analytics, Predictive & Prescriptive Analytics, instructor *2016 - 2024*
- USC, Viterbi School of Engineering, MS Analytics, Data Mining, instructor *2016 - 2024*
- USC, Viterbi School of Engineering, MS Financial Engineering, instructor *2014 - 2018*
- USC, Department of Industrial & Systems Engineering, Probability, Statitiscs, Simulation, BS instructor *2014 - 2018*
- ITAM, MBA, (Quantitative) Models for Decision Making, instructor *1995 - 2005*
- ITAM, Department of Industrial Engineering, Quality Control, Statitiscs, Simulation, instructor *1996 - 2011*
- ITESM, Department of Industrial & Systems Engineering, Evaluacion de Proyectos, Statitiscs, instructor *1987 - 1990*

Ample experience applying Machine Learning to solve real-world problems through the use of advanced statistical analysis to build prediction and classification models in applications such as Marketing Research, Portfolio Optimization, Volatility Forecasting, and Automated trading. Experience using Deep learning, Ensemble Methods, Gradient boosting, and other classification methods (KNN, Discriminant Analysis), Regression methods (Ridge, LASSO, Logistic, Multinomial regression), and Clustering methods (PCA, K-means, Hierarchical clustering).

AWARDS

- 2018-2019 Outstanding Teacher of the Year, USC Department of Industrial and Systems Engineering
- 2018, Best FE Track Paper Award. Castro R., Huang S., Liu J., Blay R., Acosta-Mejia C. *Mixtures-based Value at Risk Estimates of Financial Stocks*. Third North American International Conference on Industrial Engineering and Operations Management, IEOM Society International.

SKILLS

- Predictive Analytics: Machine Learning - Python
- Prescriptive Analytics with Simulation
- Data Mining with Python, R
- Deep Learning with Python
- Advanced Statistical Analysis
- Data Visualization: *R* ggmap, Tableau

TEACHING

Courses offered with average teaching ratings (in parentheses)

- ISE 529 Predictive Analytics, MS Analytics, 2023, USC (4.51/5.00)
- ISE 535 Data Mining, MS Analytics, 2024, USC (4.74/5.00)
- ISE 580 Prescriptive Analytics with Simulation, MS Analytics, 2023, USC (4.80/5.00)
- ISE 563 Financial Engineering, MS Financial Engineering, 2014 - 2018, USC (4.57/5.00)
- ISE 225 Engineering Statistics, BS ISE, 2015 - 2018, USC (4.38/5.00)
- ISE 220 Probability Concepts for Engineering, BS ISE, 2014 - 2019, USC (4.41/5.00)

AUTHORED BOOK

Financial Derivatives, 2018. My textbook for a course in financial derivatives, portfolio optimization, and hedging. The book includes examples and exercises in R to construct optimal portfolios, to estimate Value at Risk, to price European and American options, among other applications. It also introduces Stochastic processes and stochastic calculus for the Black and Scholes formulas, and covers Monte Carlo simulation of Brownian motion to estimate the price of some exotic options. It shows how to use libraries `RQuantlib, Rmetrics, rugarch, fOptions, fExoticOptions` for financial modeling.

INVITED SPEAKER

- IDEAS 2019 Conference on AI. *Data Science and Analytics. Competing in a data-driven World.* International Data Engineering and Science Association. October 2019, Los Angeles, CA.
- SatRday LA 2019 *Multiple Response Regression Models.* Los Angeles R Users Group. April 2019, Los Angeles, CA. `https://losangeles2019.satrdays.org/`
- IDEAS 2018 Conference on AI. *Is the Best Predictor actually the best?.* International Data Engineering and Science Association. October 2018, Los Angeles, CA. `www.ideassn.org/socal-2018/`

REFEREED PUBLICATIONS

- Acosta-Mejia, C. A., Rincon, L. A., "The Continuous Run Sum chart", *Communications in Statistics - Theory and Methods*, 43: 4371 - 4383, 2014.
- Acosta-Mejia, C. A., "Two-sided charts for monitoring nonconforming parts per million", *Quality Engineering*, 25, pp. 34 - 45, 2012.
- Acosta-Mejia, C. A., "On the Performance of the Conditional Decision Procedure in Geometric charts", *Computers and Industrial Engineering*, 61, pp. 905 - 910, 2011.
- Acosta-Mejia, C. A., Pignatiello J. J., "The Run Sum R chart with fast initial response", *Communications in Statistics - Simulation and Computation*, 39, pp. 921 - 932, 2010.
- Acosta-Mejia, C. A., Pignatiello J. J., "ARL-Design of S Charts with k-of-k Runs Rules", *Communications in Statistics - Simulation and Computation*, 38, pp. 1625 - 1639, 2009.
- Acosta-Mejia, C. A., Pignatiello J. J., "Modified R charts for improved performance", *Quality Engineering*, 20, pp. 361 - 369, 2008.
- Acosta-Mejia, C. A., "Two sets of runs rules for the $\overline{X}$ chart", *Quality Engineering*, 19, pp. 129 -136, 2007.
- Acosta-Mejia, C. A. Pignatiello J. J., "Monitoring the Variability of Symmetric Processes", *International Journal of Industrial Engineering*, 9, pp. 151-161, 2002.
- Acosta-Mejia, C. A., Pignatiello J. J., "Monitoring Process Dispersion with no Sub-grouping", *Journal of Quality Technology*, 32, pp. 89-102, 2000
- Acosta-Mejia, C. A., Pignatiello, J. J., Rao, V. B., "A Comparison of Control Charting Procedures for Monitoring Process Dispersion", *IIE Transactions*, 31, pp. 569-579, 1999
- Acosta-Mejia, C. A., "Improved p charts to Monitor Process Quality", *IIE Transactions*, 31, pp. 509-516, 1999
- Acosta-Mejia, C. A., "Monitoring Reduction in Variability using the Range", *IIE Transactions*, 30, pp. 515-523, 1999

UNDERGRADUATE/GRADUATE RESEARCH

- Castro R., Huang S., Liu J., Blay R., Acosta-Mejia C. *Mixtures-based Value at Risk Estimates of Financial Stocks.* Best Track Paper Award at the Third North American International Conference on Industrial Engineering and Operations Management, IEOM Society International, September 2018, Washington, D.C.
- Wang Q., *Multiple Response Regression Models using R.* Presented at the 2019 Saturday R day in Los Angeles. Wang is an Analytics MS student supervised by Cesar Acosta.
- Kim S., Upadhyay S., Acosta-Mejia C. *Using Categorical Variables in Predictive Analytics*, Annual IISE Conference and Expo, May 2018, Orlando, FL.