Gaurav Aggarwal

Senior Solution Advisor | Model Risk Management
Deloitte Advisory | Work Experience: 4 years

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Profile

Gaurav is a Deloitte Advisory Senior Solution Advisor in Model Risk Management. He works in the Banking and Financial Services domain concentrating specifically around the assessment and mitigation of model risk along with inherent risks (credit risk, market risk, liquidity risk, and counterparty risk) in the industry.

He has worked on models pertaining to diverse domains including but not limited to Derivatives Pricing, Credit Quality Scorecards, PD/LGD/EAD models for Retail and Wholesale portfolios, Predictive models for Revenue, Loss and Balance Sheet projections, Machine Learning and Neural Network models for Cash Management.

Gaurav's areas of interest include both deterministic and probabilistic modelling approaches for data (or distribution) analysis, inference and predictions. He holds a Masters degree in Mathematics with specialization in Probability Theory and Stochastic Calculus. He has also gained experience through online and offline courses in Data Science, Machine Learning and Optimization algorithms.

Gaurav is an active Python enthusiast and a contributor on various open-source forums. Gaurav is also trained at working with other programming platforms like C, SAS, R, SQL, and MATLAB.

Experience

Model Risk

Identifying and managing risks associated with the development, deployment, and maintenance of models used by clients for risk management, valuation, financial and regulatory reporting purposes. Major projects include:

- Validation of derivative pricing models for a major US bank. The outputs of these models are used for intra-day pricing and risk-management, end-of-day feeds for profit attribution analysis and VaR computation, internal and regulatory stress tests including CCAR/DFAST. Validated over 200 models for exotic OTC IR, FX, credit, commodities, and equity derivatives.
- Validation of derivative pricing models for a major US bank. The outputs are used to estimate bank's capital requirements using the internal modeling methodology (IMM) to calculate counterparty credit risk on the trading book. Validated 12 models for exotic OTC IR, and equity derivatives.
- Validation of predictive (forecasting) models for a major US bank. The model outputs are used to generate nine-quarter baseline and stressed forecasts in line with CCAR/DFAST guideline for annual capital assessment. Validated over 25 models for forecasting commercial assets quality, brokerage deposits, balance sheet P&L, and sales & trading PPNR.
- Validation of credit risk assessment models for a major US bank. The models include computation of probability of default (PD), loss given default (LGD), exposure at default (EAD) and expected loss (EL) for banks' portfolio using internal rating based (IRB) models in compliance with Basel 3 Final Rule, BCC 13-5 and 14-3 guidelines. Validated over 15 models for various components of retail and wholesale portfolios.
- Validation of credit scorecard models for a major US bank. The outputs credit risk ratings in accordance with bank's internal rating systems used in economic and regulatory capital (EC and RC) calculations. Validated over 20 scorecards for segments ranging from large corporates to small businesses and HNI's.
- Risk governance exercise for a major US bank. Included independent annual and ongoing model reviews for alignment with supervisory guidance on model risk management (SR11/7).

Data Science and Analytics

Data based decision making, classification and predictions using Data Science and Machine Learning algorithms.

- Validation of a neural network model for a major US bank. The model was used for cash management across the bank's nationwide branches and ATMs. The model ouputs daily forecasts of cash requirements at branches and ATMs. The network was constructed to minimize the opportunity cost of holding surplus cash, operational, liquidity, and reputational risk on the cash assets of the bank.
- Validation of credit lending decision trees for a major US bank. The ouput is used decion making of credit line extension for consumer (credit-card) portfolio based on customer level historical and KYC input features.
- Development of a customer segmentation model for an e-commerce start-up in India. The model ouputs customer segments for targeted marketing of relevant products to increase the response rate. Developed a k-means segmentation model resulting in 180% increase in customer engagement.
- Training sessions on Data Science, Machine Learning, Neural Networks, Text Minind and Natural Language Processing. This included discussions on Data Science applications and prevelant techniques with hands on experience in Python and R.

Securities Valuations

Providing Independent Price Valuations, CVA analysis, VaR-EL computations and Hedge Effectiveness assessments through Deloitte's Securities Pricing Center.

- Independent price verification of the client's valuation of their assets. Worked extensively on valuations of fixed income instruments; derivatives on IR, FX, equity, energy and credit; structured MBS and loan instruments.
- Independent computation of credit valuation adjustment (CVA) applied to the client's portfolio. Worked extensively on current exposure and potential future exposure based CVA computations for counterparty credit risk exposure across various portfolios.
- Independent computation of VaR and EL of the clients' investment portfolio. Used historical simulation, Monte Carlo based and paramteric approaches for VaR and subsequently EL calculation to provide assessment of the exposure to market risk.
- Assessment of effectiveness of clients' hedging strategies by comparing the derivative and the underlying hedged item for compliance with hedge accounting standards.
- Impact analysis of erroneous implementation of Portfolio allocation models for investment management.
- Development of a Python and SQL based tool to simultaneously query traded prices of securities from multiple vendors.

Professional Affiliations
- Student Member, Institute of Actuaries of India.

Education
- Indian Institute of Science Education and Research Mohali (IISER Mohali), BS and MS Mathematics, Probability and Stochastic Calculus. Full merit scholarship under *Innovation in Science Pursuit for Inspired Research (INSPIRE)* provided by DST, India.

Languages
- Proficient in Hindi
- Proficient in Punjabi