

# ABHISHEK K. UMRAWAL

Room No. 311, Department of Statistics, University of Delhi, Delhi – 110007, INDIA

☎ +91-981-852-2455 ✉ [akumrawal@stats.du.ac.in](mailto:akumrawal@stats.du.ac.in); [abhishek.umrawal@gmail.com](mailto:abhishek.umrawal@gmail.com)

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## WORK EXPERIENCE

### Assistant Professor at University of Delhi

Jan 2013 – Present | Delhi, India

**Postgraduate Courses:** (Department of Statistics, University of Delhi | Jul 2013 – Present)

*Paper 401: Econometrics and Time Series Analysis*

*Paper 404: Advanced Statistical Computing and Data Mining*

*Paper 102: Probability Theory*

*Statistics Labs: Statistical Analysis using IBM SPSS Statistics, R-Programming, C-Programming and MS-Excel*

### Undergraduate Courses:

*Foundation Course: Information Technology* (Lady Shri Ram College for Women | Jul 2013 – Dec 2013)

*STH 402: Probability and Statistical Methods – IV* (Sri Venkateswara College | Jan 2013 – May 2013)

**Administrative Responsibilities:** (Department of Statistics, University of Delhi | Aug 2016 – Present)

### Faculty Coordinator of Udaan – The Socio-Cultural Cell

Organizing *personality development workshops, clothes collection drives, talks on gender sensitization, knowledge sharing sessions, panel discussions, mock placement drives* and other socio-cultural activities.

### Adjunct Faculty at Bridge School of Management

Apr 2015 – Present | Gurgaon, India

Faculty for *Predictive Business Analytics (PBA) Program* – a collaboration of Bridge School of Management with Northwestern University, US. Currently teaching *Module 2: Modeling Methods, Module 3: Advanced Modeling Methods* and *Module 4: Analytics Communication and Management*, which involve training a diverse set of industrial professionals into the areas of Predictive Modeling.

### Analyst at Accenture Management Consulting

Jun 2011 – Nov 2012 | Gurgaon, India

Worked on variety of business problems involving *Promotional Marketing Strategy* (ROI Analysis), *Pricing Strategy* and *Promotional Forecasting* for a variety of clients from *Retail, Finance* and *Telecom* Industries. Utilized advanced techniques from *Regression Analysis, Time Series Analysis, Optimization, Econometrics* and *Algorithms*. *SAS, Visual Basic for Applications* (VBA) and *MS-Excel* software were deployed.

### Summer Research Project at IIT Bombay

May 2010 – Jun 2010 | Mumbai, India

**Title:** *Multivariate and Nonparametric Statistical Modelling and Analysis of some Medical and Finance Data.*

Worked on extensive modelling and analysis of some *Pathological, Protein-structural, Ayurvedic* and *Economic* (Socio-economic and Financial) data wherein various advanced statistical techniques from *Regression Analysis, Multivariate Analysis* and *Nonparametric Statistics* were deployed. In particular *Simple* and *Multiple Linear, Binary* and *Multiclass Logistic, Nonparametric* and *Shrinkage Regression Analysis, Multidimensional Scaling* and *Discriminant Analysis* were used for pre-processing and analysis of the data including some high-dimensional and ill-structured cross-sections. *SAS* (BASE, GRAPH, STAT, IML) and *MATLAB* software were deployed.

## EDUCATION

- **MANAGERIAL ECONOMICS SPECIALIZATION (ONLINE)** May 2014 – May 2015 | UI UC Online | Coursera

A series of six courses and a project offered by the *University of Illinois at Urbana Champaign* through Coursera.

1. CONSUMER AND PRODUCER BEHAVIOUR
2. MARKETS AND ALLOCATIONS
3. MACROECONOMIC VARIABLES AND MARKETS
4. POLICIES, INSTITUTIONS AND MACROECONOMIC PERFORMANCE
5. EXPLORING AND PRODUCING DATA FOR BUSINESS DECISION MAKING
6. INFERENCE AND PREDICTIVE STATISTICS FOR BUSINESS

**CAPSTONE PROJECT** – a white paper examining the decision of **Apple Inc.** to expand its manufacturing to India, from microeconomic and macroeconomic standpoints.

- **DATA SCIENCE SPECIALIZATION (ONLINE)** May 2014 – May 2015 | JHU Online | Coursera

A series of nine courses and a project offered by the *Bloomberg School of Public Health, Johns Hopkins University* through Coursera.

1. THE DATA SCIENTIST'S TOOLBOX
2. R PROGRAMMING
3. GETTING AND CLEANING DATA
4. EXPLORATORY DATA ANALYSIS
5. REPRODUCIBLE RESEARCH
6. STATISTICAL INFERENCE
7. REGRESSION MODELS
8. PRACTICAL MACHINE LEARNING
9. DEVELOPING DATA PRODUCTS

**CAPSTONE PROJECT (in Collaboration with SwiftKey) – PredWord**, a Shiny App for predicting next word in a sentence using *n-Gram Markov Models*.

- **INDIAN INSTITUTE OF TECHNOLOGY KANPUR** 2009-2011 | Kanpur, India  
*Master of Science, Statistics, Score: 8.2/10*
- **UNIVERSITY RAJASTHAN COLLEGE, UNIVERSITY OF RAJASTHAN** 2005-2008 | Jaipur, India  
*Bachelor of Arts, Applied Statistics, Score: 81.78%*
- **SH PLG SENIOR SECONDARY SCHOOL** 2005 | Alwar, India  
*Senior Secondary School Examination, Score: 82.62%*
- **ZION PUBLIC SECONDARY SCHOOL** 2003 | Alwar, India  
*Secondary School Examination, Score: 87.17%*

## ONLINE COURSES

- **ECONOMICS OF TRANSITION AND EMERGING MARKETS** (HSE Russia Online | Coursera | Feb 2015)
- **MACHINE LEARNING** (Stanford Online | Coursera | Jul 2013)
- **COMPUTATIONAL INVESTING PART 1** (Georgia Tech C21U | Coursera | May 2013)
- **INTRODUCTION TO FINANCE** (University of Michigan Online | Coursera | May 2013)
- **COMPUTATIONAL PHOTOGRAPHY** (Georgia Tech C21U | Coursera | May 2013)
- **GAME THEORY** (Stanford Online | Coursera | Mar 2013)

## COMPUTATIONAL SKILLS



- SAS® (SAS® Certified Base Programmer for SAS® 9), MATLAB, SPSS and R
- Visual Basic for Applications (VBA), Python, C and BASIC
- MS-Office (Esp. Statistical Analysis in MS-Excel) and LaTeX

## ACADEMIC PROJECTS

### ▪ **Market Simulator – Computational Investing Project**

Built a python based tool which performs the event profiling to suggest a *supposedly profitable portfolio strategy* utilizing the event information and then simulates the variation in value of portfolio over its entire life, and assesses the fund performance vis-à-vis *S&P 500* in terms of *Average and Total Returns, Volatility and Sharpe Ratio*. Further *Bollinger Bands* event study was incorporated to generate another profitable strategies.

### ▪ **Computing Shortest Path between any two of some Most Visited Spots in IIT Kanpur Campus**

Developed an application for the aforesaid problem by means of constructing a *directed positive weights graph*  $G = (V,E)$  where V is the set of all spots (vertices) and E is the set of all direct connections between any two vertices (edges). *Dijkstra's Algorithm* on C-Programming was used to solve all pairs shortest path problem.

### ▪ **Regression Analysis of Jet Turbine Engine Thrust**

Built *Multiple Linear Regression Model* of engine thrust on available regressors, diagnosed and removed *Multicollinearity* using *VIFs* and *VDPs*. *Forward, Backward* and *Stepwise* selection methods were utilized for Parsimonious Modelling. Performed residual analysis for Detection and Removal of Influential Observations, validated normality of the error using *Density Plot* and *Q-Q Plot* and validated *Homoskedasticity* using *Residual vs Predicted Responses Plot*.

### ▪ **Study and Analysis of Death Rates of Firearm Suicides and Non-Firearm Suicides in Australia**

Modeled different Death Rates using *Box-Jenkins* Methodology wherein *possible trend* was detected and removed, stationarity was validated using *Augmented Dickey Fuller Test* and then time series were modelled as *ARIMA* processes. Techniques of *Information Theory* and *Likelihood Maximization* were used for model identification and parameter estimation. Also validated the conclusions by testing for driving *white noise* sequence. *Forecasting* was done for the future death rates for the time period 2005-2010.

### ▪ **Study of Consumer Behavior of the students of IIT Kanpur towards Food Expenditure**

Studied the *Correlation between food expenditure on primary and secondary consumptions*, tested for *independence* of, and *homogeneity* among different classes of food expenditure using *Chi-square tests* and built a *Linear Regression Model* to estimate the monthly food expenditure. Utilized *Stratified Random Sampling* as the survey design and non-parametric estimation technique *Bootstrap* for variance estimation.

## INDUSTRIAL PROJECTS

- **Credit Scoring for a Leading Indian Finance Company** (Feb 2016 – Present)
- **Pricing Strategy for a Leading UK Telecom Retailer** (Apr 2012 – Nov 2012 | Accenture)
- **R & D: Associating Probability to an Optimum Spend Allocation** (Oct 2011 – Mar 2012 | Accenture)
- **Promotional Marketing for a Leading Global Financial Service Provider** (Oct 2011 – Mar 2012 | Accenture)
- **Promotional Marketing for a Leading US FMCG Retailer** (Jun 2011 – Sep 2011 | Accenture)

## RESEARCH WORK AND PUBLICATIONS

- Umrawal A. K. (2017). *Expansion of manufacturing of Apple iPhone to India*. LinkedIn Publishing.
- Umrawal A. K. (2016). *Data Analytics – A Philosophical Perspective*. Published on LinkedIn and, in Bridge School of Management Newsletter, Jan 2017.
- Umrawal, A. K. (2016). *Comparison of Transition Process in Former Soviet Union (SU) and China*. Working Article.

- Wardhan, R., Umrawal, A. K. and Budhraj, M. (2014). *An Application of Logistic Regression to study Women Empowerment and Sex Discrimination*. Conference Paper. Empowering Women: The Indian Socio-Cultural Scenario, 1<sup>st</sup> Edition, 98-115.
- Umrawal, A. K. (2012). *Associating Probability to an Optimum Spend Allocation in Marketing Mix Modeling (MMM)*. Technical Report. As part of an R&D project at Accenture.

## INVITED TALKS AND WORKSHOPS

- **“Skill Training in Data Analytics.”** A 5-day training organized by Centre for Science Education and Communication (CSEC), University of Delhi from Jun 20 – Jun 24, 2017.
- **“Introduction to SAS and SAS Analytics.”** A 90-hour training organized by Bridge School of Management, Gurgaon, India, held triweekly from Sep 26 – Nov 14, 2016.
- **“Market Basket Analysis using R.”** A 4-hour session organized by FORE School of Management, New Delhi, India, held on Aug 28, 2016.
- **“Programming and Predictive Modeling using R.”** A 24-hour training organized by Weekendr Innovation Labs, Delhi, India, held biweekly from Jul 10 – Aug 06, 2016.
- **“Programming and Predictive Modeling using R.”** A 24-hour training organized by Weekendr Innovation Labs, Delhi, India, held biweekly from Jun 03 – Jul 03, 2016.
- **“Programming and Predictive Modeling using R.”** A 24-hour training organized by Weekendr Innovation Labs, Delhi, India, held biweekly from Apr 02 – Apr 30, 2016.
- **“SPSS Winter Training.”** An 18-hour training organized by Weekendr Innovation Labs, Delhi, India, held biweekly from Dec 20, 2015 – Jan 09, 2016.
- **“Visual Analytics through R.”** A 2-hour talk organized by Bridge School of Management, Gurgaon, India, held on Oct 10, 2015.
- **“Econometric Modeling and Statistical Simulation using IBM SPSS Statistics.”** A 2-day workshop organized by IIS University, Jaipur, India, held on Mar 18 – Mar 19, 2014.

## BOOK REVIEWS AND EDITING

- Reviewed McClave, J. T. and Sincish, T. T. (2017). *Statistics*, 13<sup>th</sup> Edition, Pearson Education Ltd, Hertford, England.
- Reviewed Jhonson, R. A., Miller, I. and Freund, J. (2017). *Miller and Freund’s Probability and Statistics for Engineers*, 9<sup>th</sup> Edition, Pearson Education Ltd, Hertford, England.
- Reviewed Anonymous (2016). *Statistical Analysis in Simple Steps using R*, 1<sup>st</sup> Edition, Sage Publishing, California, United States.
- Revised and edited Agresti, A. and Franklin, C. A. (2016). *Statistics: The Art and Science of Learning from Data*, 4<sup>th</sup> Edition, Pearson Education Ltd, Hertford, England.
- Reviewed Walpole, R. E., Myers, R. H., Myers, S. L. and Ye, K. E. (2016). *Probability and Statistics for Engineers and Scientists*, 10<sup>th</sup> Edition, Pearson Education Ltd, Hertford, England.
- Reviewed Seema Sharma (2015). *Statistics for Business and Economics*, 1<sup>st</sup> Edition, Guiding Star Digital Publishers, Delhi, India.

## PROFESSIONAL MEMBERSHIPS

- Member of the Experts Panel of National Research Development Corporation (NRDC), Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, Government of India.

## HONORS AND AWARDS

- **Faculty Excellence Award** (Bridge School of Management | Dec 2015)
- **Management Consulting "Rock Star" Sales Award** (Accenture | Jun 2012)
- **Ranked 5th | Master Degree** (Indian Institute of Technology Kanpur | 2011)
- **Junior Research Fellowship** (Joint CSIR-UGC National Eligibility Test (NET) | Dec 2010)

- **Ranked 1st | Bachelor Degree** (University of Rajasthan | 2008)
- **Ranked 48th in Secondary School Examination Merit List** (Board of Secondary Education Rajasthan | 2003)

## EXTRA CURRICULARS

- **Elementary Urdu Proficiency Certificate** (Rekhta Foundation | 2017)
- **Volunteer Manager – Jashn-e-Rekhta 2017** (Rekhta Foundation | 2017)
- **1<sup>st</sup> Prize | English Open Mic** (Delhi Poetry Festival, Season 4 | 2016)
- **Certificate of Appreciation | Hindi Open Mic** (Delhi Poetry Festival, Season 4 | 2016)
- **French - Level I Certificate** (HSS, Indian Institute of Technology Delhi | Apr 2013)
- **2<sup>nd</sup> Prize | Essay Writing Competition** (Youth Festival | University of Rajasthan | 2008)
- **2<sup>nd</sup> Prize | Poster Making Competition** (University Rajasthan College | 2007)
- **1<sup>st</sup> Prize | Essay Writing Competition** (Youth Festival | University of Rajasthan | 2007)
- **2<sup>nd</sup> Prize | Speech Competition** (District Level | Sh PLG Senior Secondary School | 2004)