Asim Karim

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Summary

Dr. Karim is an internationally recognized academic and an experienced consultant in the areas of data mining, machine learning, and applied artificial intelligence. He has authored over 50 research publications at leading venues including two books, and he has 12 years of experience in teaching and supervising undergraduate and graduate students in computer science.

Professional Experience

Associate Professor, Dept. of Computer Science, LUMS, Pakistan (07/2006-present)
Assistant Professor, Dept. of Computer Science, LUMS, Pakistan (07/2002-06/2006)

Teaching
- Graduate Courses: Data Mining, Machine Learning, Topics in Data Mining Research, Neural Networks, Research Trends in AI, Artificial Intelligence, Data Warehousing, High-Performance Computing
- Undergraduate Courses: Data Mining, Intro to AI, Database Systems, Adv. Topics in AI, Neural Networks, Expert Systems

Research Interests
- I direct the Knowledge and Data Engineering (KADE) Lab focusing on data mining algorithms and applications, machine learning, and applied artificial intelligence. Recent directions include text mining, classification and clustering methods, social media analytics, and applications of machine learning in Web, software engineering, and medicine.
- High performance parallel and cluster computing with an emphasis on algorithms and applications in data mining and machine learning.
- Assistive technology for the developing world – technology that can help people with disabilities.
- Intelligent systems and systems engineering.

Theses Supervised
- Supervised four PhD theses, 2006 (as co-supervisor), 2012, 2013, and 2014.
- Supervising one PhD candidates; graduation expected in 2015.
- Supervised several M.S. and Senior Projects.

Infrastructure Development
- Established the first dedicated cluster computer at LUMS as a university-wide resource for high performance computing.
- Set up Knowledge and Data Engineering Lab to support research and development efforts in data mining, machine learning, and informatics.
- Set up an assistive technology lab for persons with vision impairments.

External Funding
- Rs. 15 million (approx.) over 28 months for "ALAP: An Open Source Project for Accessible LaTeX-based Authoring and Presentation of Mathematical Documents,"
- Rs. 0.9 million over one year for "ALAP: An Integrated Open-Source System for Accessible Scientific Documents."
- Rs. 1.11 million equipment grant for setting up an assistive technology lab for persons with disabilities.

- Rs. 2.63 million over 2 years for "Data Warehousing Virtualization Framework for Enhanced Business Intelligence." (joint project with PUCIT)
- Rs. 1.1 million over 2 years for "Intelligent Network Intrusion Detection System."
- Rs. 4.3 million over 3 years for "Automatic Control Programming of Robots Through Imitation" (as Co-PI).
- Several international conference travel grants.
- Two international collaboration and exchange visit grants.

Internal Funding

- Several internally funded research projects.
- Several internal international conference travel grants.

Administrative Contributions

- Head, Working group on Accessibility at LUMS.
- Convener, University standing committee on Accessibility, 2011-present.
- Revised the CS undergraduate curriculum.
- Evaluated internal research proposals, evaluated research publications, and developed procedures for evaluation as member of the departmental research committee.
- Reviewed and revised rules and regulations of the graduate program as part of the departmental steering committee.

Visiting Scholar, Computer & Decision Engineering Dept., Universite Libre de Bruxelles, Belgium (06/2013)
Collaborated with Dr. Toon Calders on techniques for controlling attribute effect in regression models. This visit was funded by European Commission IT4BI program.

Visiting Academic Researcher, Dept. of Computer Science, U. of York, UK (04/2009-06/2009)
Collaborated with Dr. James Cussens and Dr. Suresh Manandhar on developing a tag recommender for a social bookmarking system. This work was funded by the European Commission EURECA program.

Grad Research Associate. Knowledge Engineering Lab, The Ohio State University, USA (06/96-03/2002)
- Developed a neural network model for estimating freeway work zone capacity and delay.
- Developed a case-based reasoning decision support tool for freeway work zone traffic control.
- Developed robust freeway incident detection algorithms employing wavelet domain processing, fuzzy clustering, and neural network classification.
- Developed an object-oriented software framework for construction scheduling, cost optimization, and management.
- Adapted the framework for the development of a Windows software application using MFC and Visual C++.
- Extended a patented neural dynamics optimization model and applied it to two different domains: construction cost minimization and minimum weight design of cold-formed steel breams.
- Assisted in writing several research proposals for funding of new projects (from DOTs and NSF).
- Successfully completed two projects as the primary research associate, and contributed to others.

Graduate Teaching Associate. The Ohio State University, USA (10/97-12/97)
Assisted students in CE 532 (Structural Steel Design) with the in-house developed software and the commercial software Ram Steel.

Guest Lecturer. The Ohio State University, USA (04/97-12/2001)
Prepared and presented guest lectures in CIS 739 (Knowledge-based Systems in Engineering) on the following topics:
- Reuse in Software Engineering: Components, Frameworks, and Patterns
- Discrete Wavelet Analysis and its Applications
- Introduction to Wavelet Neural Networks

Lab Manager. Knowledge Engineering Lab, The Ohio State University, USA (04/97-03/2002)
Maintained a lab of Windows PCs. Guided and assisted graduate students in their computation needs.

Design Engineer. Amir, Rizwan, and Wasim (Pvt.) Ltd., Lahore, Pakistan (09/94-12/94)

Responsible for the analysis and design, including the final detail plans, of reinforced concrete buildings and steel roof trusses. Worked with the client from requirement analysis to final detail plans for the design of a 50,000 gallons overhead reservoir.

Education

Ph.D. The Ohio State University, USA (04/97-03/2002)
Concentration in Computer and Information Science and Systems Engineering. Research areas: decision-support systems, neural networks, pattern analysis, intelligent systems, wavelet analysis, optimization, and software engineering. Thesis: "Wavelet-Neural Network Models for Automatic Freeway Incident Detection." Advisor: Dr. Hojjat Adeli.

M.S. The Ohio State University, USA (01/95-12/96)
Civil Engineering with minor in Computer and Information Science. Thesis: "Neural Dynamics Model for Optimization of Construction Projects and Optimum Design of Cold-Formed Steel Beams." Advisor: Dr. Hojjat Adeli.

B.Sc. (Honors) University of Engineering and Technology, Lahore, Pakistan (06/89-07/94)
Civil Engineering. Research Project: "Calculation of Lateral Loads on High-Rise Buildings by Approximate Methods."

Books

1. Adeli, H. and **Karim, A.** (2005), *Wavelets in Intelligent Transportation Systems*, Wiley, UK, 248 pages.
2. Adeli, H. and **Karim, A.** (2001), *Construction Scheduling, Cost Optimization, and Management: A New Model Based on Neurocomputing and Object Technologies*, Spon Press (Taylor and Francis), UK, 352 pages.

International Journal Articles

1. Nasir, J. A., Varlamis, I., **Karim, A.**, and Tsatsaronis, G. (2013), "Semantic Smoothing for Text Clustering," *Knowledge-Based Systems*, Vol. 54, pp. 216-229.
2. Junejo, K. N. and **Karim, A.** (2013), "Robust Personalizable Spam Filtering Via Local and Global Discrimination Modeling," *Knowledge and Information Systems*, Vol. 34, No. 2, pp. 299 – 334.
3. Hassan, M. T. and **Karim, A.** (2011), "Impact of Behavior Clustering on Web Surfer Behavior Prediction," *Journal of Information Science and Engineering*, Vol. 27, No. 6, pp. 1855-1870.
4. Khan, S., Iqbal, S. and **Karim, A.** (2009), "Helicobacter Urease: Niche Construction at Single Molecule Level," *Journal of Biosciences*, Vol. 34, No. 4, pp. 503-511.
5. Maqbool, O., Babri, H.A., **Karim, A.**, and Sarwar, M. (2005), "Metarule-Guided Association Rule Mining for Program Understanding," *IEE Proceedings – Software*, Vol. 152, No. 6, pp. 281-296.
6. **Karim, A.** and Adeli, H. (2003), "Radial Basis Function Neural Network for Work Zone Capacity and Queue Estimation," *Journal of Transportation Engineering*, ASCE, Vol. 129, No. 5, pp. 494-502.
7. **Karim, A.** and Adeli, H. (2003), "CBR Model for Freeway Work Zone Traffic Management," *Journal of Transportation Engineering*, ASCE, Vol. 129, No. 2, pp. 134-145.
8. **Karim, A.** and Adeli, H. (2003), "Fast Automatic Incident Detection on Urban and Rural Freeways Using the Wavelet Energy Algorithm," *Journal of Transportation Engineering*, ASCE, Vol. 129, No. 1, pp. 57-68.
9. **Karim, A.** and Adeli, H. (2002), "Incident Detection Algorithm Using Wavelet Energy Representation of Traffic Patterns," *Journal of Transportation Engineering*, ASCE, Vol. 128, No. 3, pp. 232-242.
10. **Karim, A.** and Adeli, H. (2002), "Comparison of Fuzzy Wavelet Radial Basis Function Neural Network Freeway Incident Detection Model with California Algorithm," *Journal of Transportation Engineering*, ASCE, Vol. 128, No. 1, pp. 21-30.
11. Adeli, H. and **Karim, A.** (2000), "Fuzzy-Wavelet RBFNN Model for Freeway Incident Detection," *Journal of Transportation Engineering*, ASCE, Vol. 126, No. 6, pp. 464-471.
12. **Karim, A.** and Adeli, H. (1999), "Global Optimum Design of Cold-Formed Steel I-Shape Beams," *Practice Periodical on Structural Design and Construction*, ASCE, Vol. 5, No. 2, pp. 78-81.
13. **Karim, A.** and Adeli, H. (1999), "Global Optimum Design of Cold-Formed Steel Hat-Shape Beams," *Thin-Walled Structures*, Vol. 35, pp. 275-288.
14. **Karim, A.** and Adeli, H. (1999), "Global Optimum Design of Cold-Formed Steel Z-Shape Beams," *Practice Periodical on Structural Design and Construction*, ASCE, Vol. 4, No. 1, pp. 17-20.

15. **Karim, A.** and Adeli, H. (1999), "A New Generation Software for Construction Scheduling and Management," *Engineering Construction and Architectural Management*, Vol. 6, No. 4, pp. 380-390.
16. **Karim, A.** and Adeli, H. (1999), "CONSCOM: An OO Construction Scheduling and Change Management System," *Journal of Construction Engineering and Management*, ASCE, Vol. 125, No. 5, pp. 368-376.
17. **Karim, A.** and Adeli, H. (1999), "OO Information Model for Construction Project Management," *Journal of Construction Engineering and Management*, ASCE, Vol. 125, No. 5, pp. 361-367.
18. Adeli, H. and **Karim, A.** (1997), "Neural Network Model for Optimization of Cold-Formed Steel Beams," *Journal of Structural Engineering*, ASCE, Vol. 123, No. 11. pp. 1535-1543.
19. Adeli, H. and **Karim, A.** (1997), "Scheduling/Cost Optimization and Neural Dynamics Model for Construction," *Journal of Construction Engineering and Management*, ASCE, Vol. 123, No. 4, pp. 450-458.

International Conference Articles

20. Calders, T., **Karim, A.**, Kamiran, F., Ali, W., and Zhang, X. (2013), "Controlling Attribute Effect in Linear Regression Models," *Proc. of IEEE International Conference on Data Mining (ICDM),* Dallas, TX, USA, Dec. 7 – 10, 2013.
21. Tariq, A., **Karim, A.**, Gomez, F., and Foroosh, H. (2013), "Exploiting Topical Perceptions over Multilingual Text for Hashtag Suggestion on Twitter," *Proc. of International FLAIRS Conference*, St. Pete Beach, Florida, USA, May 22 – 24, 2013.
22. Khan, O. A. and **Karim, A.** (2012), "MIKE: An Interactive Microblogging Keyword Extractor Using Contextual Semantic Smoothing," *Proc. of International Conference on Computational Linguistics (COLING)*, Mumbai, India, Dec. 10 – 14, 2012.
23. Kamiran, F., **Karim, A.**, and Zhang, X. (2012), "Decision Theory for Discrimination-Aware Classification," *Proc. of IEEE International Conference on Data Mining (ICDM),* Brussels, Belgium, Dec. 10 – 13, 2012.
24. Kamiran, F., **Karim, A.**, Verwer, S., and Goudriaan, H. (2012), "Classifying Socially Sensitive Data Without Discrimination: An Analysis of a Crime Suspect Dataset," *Proc. of ICDM Workshops – Discrimination and Privacy Aware Data Mining (DPADM)*, Brussels, Belgium, Dec. 10, 2012.
25. Khan, O. A. and **Karim, A.** (2012), "A Rule-based Model for Normalization of SMS Text," *Proc. of IEEE International Conference on Tools with Artificial Intelligence (ICTAI)*, Athens, Greece, Nov. 7 – 9, 2012.
26. Javed, F., Hassan, M. T., Junejo, K. N., Arshad, N, and **Karim, A.** (2012), "Self-Calibration: Enabling Self-Management in Autonomous Systems by Preserving Model Fidelity," *Proc. of IEEE International Conference on Engineering of Complex Computer Systems (ICECCS)*, Paris, France, July 18 – 20, 2012.
27. Hassan, M. T. and **Karim, A.** (2012), "Clustering and Understanding Documents via Discrimination Information Maximization," *Proc. of Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, Kuala Lumpur, Malaysia, May 29 – Jun. 1, 2012.
28. Tariq, A. and **Karim, A.** (2011), "Fast Supervised Feature Extraction by Term Discrimination Information Pooling," *Proc. of International ACM Conference on Information and Knowledge Management (CIKM)*, Glasgow, UK, Oct. 24 – 28, 2011.
29. Nasir, J. A., **Karim, A.**, Tsatsaronis, G., and Varlamis, I. (2011), "A Knowledge-based Semantic Kernel for Text Classification," *Proc. Of International Symposium on String Processing and Information Retrieval (SPIRE)*, Pisa, Italy, Oct. 17 – 21, 2011.
30. Hassan, M.T., **Karim, A.**, Javed, F., and Arshad, N. (2010), "Self-Optimizing a Clustering-based Tag Recommender for Social Bookmarking Systems," *Proc. Of International Conference on Machine Learning and Applications (ICMLA)*, Washington, DC, USA, Dec. 12 – 14, 2010.
31. Hassan, M.T., **Karim, A.**, Manandhar, S., and Cussens, J. (2009), "Discriminative Clustering for Content-Based Tag Recommendation in Social Bookmarking Systems," *Proc. of ECML PKDD Discovery Challenge Workshop*, Bled, Slovenia, Sep. 7, 2009.
32. Hassan, M.T., Junejo, K.N., and Karim, A. (2009), "Learning and Predicting Key Web Navigation Patterns Using Bayesian Models," *Computational Science and its Applications (Proc. of ICCSA)*, LNCS, Vol. 5593, Springer, pp. 877-887, Korea, Jun., 2009.
33. Junejo, K.N. and **Karim, A.** (2008), "A Robust Discriminative Term Weighting based Linear Discriminant Method for Text Classification," *Proc. of IEEE International Conference on Data Mining (ICDM)*, 15 – 19 Dec., Pisa, Italy.
34. Junejo, K.N. and **Karim, A.** (2007), "PSSF: A Novel Approach for Personalized Service-side Spam Filtering," *Proc. of IEEE/WIC/ACM International Conference on Web Intelligence (WI 2007)*, IEEE, 2 – 5 Nov., 2007, Silicon Valley, USA.

35. Junejo, K.N. and **Karim, A.** (2007), "Automatic Personalized Spam Filtering through Significant Word Modeling," *Proc of International Conference on Tools with AI (ICTAI 2007)*, IEEE, 29 – 31 Oct., 2007, Patras, Greece.

36. Hassan, M.T., Junejo, K.N., and **Karim, A.** (2007), "Bayesian Inference for Web Surfer Behavior Prediction," *ECML/PKDD Discovery Challenge Workshop*, 17 – 21 Sep., 2007, Warsaw, Poland. **(Selected as One of the Best Three Solutions)**

37. Bawany M.Y., **Karim, A.**, Khan, A., and Siddiqui, M.S. (2007), "Outlier Detection in Evolving Data Streams: An Evaluation of the LOADED Algorithm," *Proc. of the International Conference on Intelligent Computing and Information Systems (ICICIS 2007)*, ACM, 15 – 18 March, Cairo, Egypt.

38. Ashfaq, S., Farooq, M.U., and **Karim, A.** (2006), "Efficient Rule Generation for Cost-Sensitive Misuse Detection Using Genetic Algorithms," *Proc. of International Conference on Computational Intelligence and Security (CIS 2006)*, IEEE, 3 – 6 November, 2006, Guangzhou, China.

39. Junejo, K.N., Yousaf, M.M., and **Karim, A.** (2006), "A Two-Pass Statistical Approach for Automatic Personalized Spam Filtering," *ECML/PKDD Discovery Challenge Workshop*, 18 – 22 September. 2006, Berlin, Germany. **(Winner of the Spam Filtering Performance Award)**

40. **Karim, A.**, Ahmad, I, Jami, S.I, and Sarwar, M. (2006), "Cluster Analysis of Traffic Flows on a Campus Network," *Proc. of IASTED International Conference on Artificial Intelligence and Applications (AIA 2006)*, ACTA Press, 13 – 16 Feb., 2006, Innsbruck, Austria.

41. **Karim, A.** (2005), "Computational Intelligence for Network Intrusion Detection: Recent Contributions," *Proc. of International Conference on Computational Intelligence and Security (CIS 2005)*, LNCS, Vol. 3801, Springer, 15 – 19 December, 2005, Xian, China.

42. **Karim, A.**, Jami, S.I., Ahmad, I., Sarwar, M. and Uzmi, Z. (2004), "Clustering IP Addresses Using Longest Prefix Matching and Nearest Neighbor Algorithms," *Proc. of Pacific Rim International Conference on AI (PRICAI 2004)*, LNCS, Vol. 3157, Springer, 11 – 13 August, 2004, Auckland, New Zealand.

43. Ather, F., Awais, M.M., **Karim, A**., Khwaja, M.A.F., Shaikh, O. and Siddiqui, U.H. (2003), "Modeling and Forecasting Financial Time-Series – Comparison of Forecasting Ability of Neural Networks, Genetic Programming, and Econometric Methods," *International Conference in Economics VII*, Sep. 6-9, 2003, Ankara, Turkey.

International/National Conference Articles

44. Uddin, M. M. Hassan, M. T., and **Karim, A.** (2011), "Personalized Versus Non-Personalized Tag Recommendation: A Study on Three Social Networks," *Proc. of International Multi-topic Conference (INMIC)*, IEEE, Karachi, Pakistan, Dec. 2011.

45. Uppal, S.P., Butt, S.T., and **Karim, A.** (2007), "Effectiveness of Hierarchical Heavy Hitter Identification for Intrusion Detection," *Proc. of International Multi-topic Conference (INMIC)*, IEEE, Dec. 2007, Lahore, Pakistan.

46. Jawad, A., **Karim, A.**, and Khan, I. (2006), "Online Algorithms for Complete Itemset Counts Over a Data Stream Using Set-to-String Mappings," *Proc. of International Multi-topic Conference (INMIC)*, IEEE, 23 – 24 December, Islamabad, Pakistan.

47. Shah, S.A.A., Saif-ur-Rehman, Naseem, U., and **Karim, A.** (2006), "Motion Segmentation through Incremental Hierarchical Clustering," *Proc. of International Multi-topic Conference (INMIC)*, IEEE, 23 – 24 December, Islamabad, Pakistan.

48. Maqbool, O., **Karim, A.**, Babri, H.A., and Sarwar, M. (2004), "Reverse Engineering Using Association Rules," *Proc. of International Multi-topic Conference (INMIC)*, IEEE, Dec. 24 - 26, Lahore, Pakistan.

49. Mahmood, A., Awais, M.M. and **Karim, A.** (2003), "Automatically Generating Association Rules Under Diverse Operational Conditions for a Large Scale Power Plant," *International Bhurban Conference on Applied Sciences and Technology*, June 19-21, Bhurban, Pakistan.

Web Articles

1. **Karim, A.** "H.323 and Associated Protocols," *Citeseer* (and many other sites), 2000.
2. **Karim, A.** "All-to-All Personalized Broadcast Schemes for Irregular Switched Networks," *Citeseer*, 1999.
3. **Karim, A.** "Wavelet-based Finite Element Method," *Citeseer* (and other sites), 1999.
4. **Karim, A.** "Muli-objective Optimization Techniques," *Citeseer*, 1998.

Poster Presentations
1. **Karim, A.** and Adeli, H. (1996), *Neural Networks Computing in Highway Engineering*, Ohio Transportation Engineering Conference, Columbus, Ohio, November 19-20, 1996.
2. **Karim, A.** and Adeli, H. (1997), *Object-Oriented Information Model for Construction Change Management*, Ohio Transportation Engineering Conference, Columbus, Ohio, November 18-19, 1997.
3. **Karim, A.** and Adeli, H. (1998), *CONSCOM: A New Construction Scheduling, Cost Optimization, and Change Management System for Highway Construction Projects*, Ohio Transportation Engineering Conference, Columbus, Ohio, November 17-18, 1998.

Publication Impact
- Total citations: 1138 (based on Google Scholar on 01/2014)
- H-index: 15 (based on Google Scholar on 03/2014)
- Sum of Impact Factors of journal articles: 11.549 (based on 2010 ISI SCI)

Invited Talks / Collaboration Visits
1. Universite Libre de Bruxelles (ULB, Belgium), Research visit to Toon Calders group, Dec. 17 - 19, 2012.
2. Karim, A. (2011), invited speaker at White Cane Day, Islamabad, Nov. 3, 2011.
3. Karim, A. (2010), "Assistive Technology: My Perspective and Way Forward," Regional Leadership Conference of Persons with Disabilities, Islamabad, Aug. 2, 2010.
4. Karim, A. (2009), "Text Classification and Clustering: A Simple Discriminative Approach," The University of York, May 20, UK.
5. Karim, A. (2008), "Data Warehousing: Concepts and Techniques," Kinnaird College, Mar. 26, Lahore, Pakistan.
6. Karim, A. (2007), "Data Warehousing: Concepts and Techniques," Kinnaird College, April 28, Lahore, Pakistan.
7. Karim, A. (2005), "Introduction to Data Warehousing and Data Mining," Kinnaird College, Nov. 28, Lahore, Pakistan.
8. Karim, A. (2003), "Nonlinear Optimization – Theory and Practice," *International Bhurban Conference on Applied Sciences and Technology - Control and Simulation*, Jun. 19 – 21, 2003, Bhurban, Pakistan.

Software
Karim, A. and Adeli, H. (1998), *CONSCOM User's Manual*, Version 1.0, Knowledge Engineering Lab, The Ohio State University, Columbus, OH.

Honors and Awards
1. Eurpoean Commission IT4BI Visiting Scholar, June 2013.
2. VLDB Travel Fellowship Award, VLDB, Singapore, 2010.
3. Erasmus Mundus EURECA Visiting Academic Researcher, March to June, 2009.
4. User Behavior Modeling Award (2nd Position), ECML/PKDD Discovery Challenge, Warsaw, Poland, 2007.
5. Spam Filtering Performance Award (1st Position), ECML/PKDD Discovery Challenge, Berlin, Germany, 2006.
6. University Merit Award. University of Engineering and Technology, Lahore, Pakistan, 1992-1993.
7. B.Sc. with honors. University of Engineering and Technology, Lahore, Pakistan, 1994.
8. First position in school among 80 students in F.Sc. (Higher Secondary School Examination), Lahore, Pakistan, 1988.
9. First position in school among 40 students in GCE O' levels, Bauchi, Nigeria, 1986.

Grants
1. Rs. 15 million (approx..) over 28 months for "ALAP: An Open-Source Project for Accessible LaTeX-based Authoring and Presentation of Mathematical Documents," from National ICT R&D Fund (to start, approved).
2. Rs. 900,000 over one year for "ALAP: An Integrated Open-Source System for Accessible Scientific Documents" from Sightsavers International, 2010 (equipment and exploratory research grant).
3. Rs. 150,000 for organizing Web Accessibility Workshop from Sightsavers International, 2010.
4. Rs. 2.63 million over 2 years for "Data Warehousing Virtualization Framework for Enhanced Business Intelligence," from HEC, joint project with PUCIT, 2008.

5. Rs. 1.11 million equipment grant for setting up an assistive technology lab for persons with disabilities from Sightsavers, Inc, 2007.
6. Rs. 1.1 million over 2 years for "Intelligent Network Intrusion Detection System" from PTCL R&D Fund (PI), Jan. 2005.
7. Rs. 4.3 million over 3 years for "Automatic Control Programming of Robots Through Imitation" from PTCL R&D Fund (Co-PI), Dec. 2005.

Consulting
1. Technical consulting for text analytics companies, several.
2. Technical consulting for advertising prediction models on the Web.
3. Technical consulting for SKMCH&RC (cancer hospital) for the development of a data warehouse and business intelligence infrastructure, Jan. 2010 to Aug. 2010.
4. Technical consulting for Tricastmedia, Inc for the R&D project "Ranking Product and their Features Based on Reviews on the Web," Jul. 2007 – Jan. 2008.
5. Technical consulting for Intagleo (Pvt) Ltd for the R&D project "Location-based Search Engine for Mobile Devices," Jan. 2008 – Mar. 2008.

Member Reviewer Panel
1. Data Mining and Knowledge Discovery (DMKD), 2014 – present.
2. Information Systems, 2013 – present.
3. World Wide Web Journal, 3012 – present.
4. Integrated Computer-Aided Engineering, 2000 – 2003, 2006, 2008-present.
5. Computer-Aided Civil and Infrastructure Engineering, 1997 – present.
6. IEEE Transactions on Intelligent Transportation Systems, 2004 – 2007.
7. Higher Education Commission of Pakistan (Research Proposals), 2003 – 2006.
8. Journal of Intelligent and Fuzzy Systems, 2005.
9. Journal of VLSI Signal Processing, 2003.
10. Engineering Applications of Artificial Intelligence, 2000 – 2001.
11. Neurocomputing, 2000.
12. Journal of Applied Systems Studies, 1999.

Member Conference/Workshop Committees
1. Program Committee Member, International Multitopic Conference (INMIC), Lahore, Pakistan, Dec. 2013.
2. Director/Co-Presenter, Web Accessibility Workshop, March 1 – 4, 2010, LUMS, Lahore, Pakistan.
3. Program Committee Member, International Conference on Multimedia Computing and Information Technology, Mar. 2 – 4, 2010.
4. Resource Person, Intelligent Data Analysis Methods in Functional Genomics, March 17 – 18, 2007, CASM, LUMS, Lahore, Pakistan.
5. Program Committee Member, International Conference on Computational Intelligence and Security, Dec. 15 – 19, 2007, Harbin, China.
6. Program Committee Member, International Conference on Computational Intelligence and Security, Nov. 3 – 6, 2006, Guangzhou, China.
7. Technical Program Co-Chair, IEEE International Conference on Engineering of Intelligent Systems, Apr. 22 – 23, 2006, Islamabad, Pakistan.
8. Technical Committee Member, International Conference on E-Governance, Dec. 9 – 11, 2005, Lahore, Pakistan.
9. Co-Coordinator, Workshop on Business Intelligence: Overview of Data Warehousing and Data Mining, Dec. 16 – 18, 2005, CASM, LUMS, Lahore, Pakistan.
10. Director, Workshop on Business Intelligence – Creating Customer Value, Jan. 16 – 17, 2004, REDC, LUMS, Lahore, Pakistan.
11. Reviewer, International Conference on Computational Intelligence and Security, Dec. 15 – 19, 2005, Xian, China.
12. Reviewer, Workshop on Frontiers of Information Technology, 2004 and 2005, Islamabad, Pakistan.
13. Reviewer, International Conference on Emerging Technologies, Sep. 17 – 18, 2005, Islamabad, Pakistan.
14. Reviewer, INMIC, 2004, Lahore, Pakistan.

15. Reviewer, International Conference on Parallel and Distributed Systems, Jul. 9 – 11, 2004, Newport Beach, California, USA.

Member of Professional Organizations
Member, IEEE, 1998-present.

Expertise
- Data mining, machine learning, pattern recognition
- Information retrieval and extraction, text analytics, Web analytics, natural language processing
- Predictive analytics, pattern discovery, social media analytics
- Neural networks, fuzzy systems, knowledge-based systems, case based reasoning, genetic algorithms
- Wavelet analysis, signal processing
- Parallel computing, cluster and grid computing
- Data warehousing, database systems
- Object and component technology (patterns, frameworks, UML), software engineering
- Linear and nonlinear optimization, discrete system simulation, statistical analysis