

Dr. Maheen Bakhtyar

Computer Science and Information Technology
University of Balochistan, Pakistan.
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EDUCATION

Degree	Institute	Year
Ph.D. (CS)	Asian Institute of Technology, Thailand	2013
MS (CS)	Asian Institute of Technology, Thailand	2010
BS (CS)	International Islamic University, Islamabad, Pakistan	2007

WORK EXPERIENCE

Assistant Professor at University of Balochistan, Pakistan (2014 - Present)	<ul style="list-style-type: none">- MS and Ph.D. Research supervisions- Teaching under-graduate and graduate level courses- Teaching various courses mainly, Natural Language Processing, Fundamentals of Algorithms, Advance Algorithm Analysis, Human Computer Interaction, Information Retrieval and Natural Language Processing, Web Programming, Advance Programming Languages, Multimedia Technologies, to BS, MCS and MS programs.- Guiding and evaluating students' final projects and research thesis.
MS and Ph.D. Coordinator (Oct 2019-Oct 2020)	<ul style="list-style-type: none">- Managing MS and PhD courses- Assigning of the courses- Managing and evaluating students' research thesis and synopsis taking care of the deadlines and presentation defense- Coordinating between the department committee and the higher administration for smoothly working
Member of Departmental Admission Committee (DAC) of Computer Science and Information Technology Department, UOB	<ul style="list-style-type: none">- Responsible to collaborate with the committee members and evaluate research proposals and final defense- Discuss and solve the issues related to MS and PhD.
Program Coordinator of BS(IT) program of Computer Science Department, UOB	<ul style="list-style-type: none">- Assigning and managing courses offered to the IT program- Check and ensure classes and studies going on smoothly
Lecturer at University of Balochistan, Pakistan (2007 - 2014)	<ul style="list-style-type: none">- Teaching various courses mainly, Fundamentals of Algorithms, Advance Algorithm Analysis, Web Programming, Advance Programming, Multimedia

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	Technologies, Information Retrieval and Natural Language Processing to BS, MCS and MS level. - Guiding and evaluating students' final projects and research thesis.
Research Internee National Institute of Informatics, Tokyo, Japan (June 2011 - April 2012)	- Development of Cooperative Query Answering System ¹ for conjunctive queries. - System generalizes the user query by combining different operators/techniques in an iterative manner and generate set of relaxed queries. - Designing a similarity metric for semantic filtering of the unrelated answers produced after the generalization process.
Internee at <u>National Telecommunication Corporation, Islamabad, Pakistan</u> (2006-2007)	- Developed the Billing and Bill Printing software of Dial-up, DSL Internet and intranet connections, ISDN Internet. DXX Intranet Pakistan services, PERN, and video conferencing services.

Ph.D. RESEARCH WORK

The research addresses several important aspects of question answering including question classification, question disambiguation resulting problem of misdiagnoses in medical QA systems arising due to overlapping symptoms for different diseases. It also addresses some of the issues faced in cooperative query answering in database systems, filtering the unrelated answers and only related answers are returned to the user.

SELECTED PUBLICATIONS

1. Chandio B. A, Imran, A. S, **Bakhtyar, M.**, et al., (2022) Attention-Based RU-BiLSTM Sentiment Analysis Model for Roman Urdu, in *Applied Sciences (IF 2.679)*
2. Chandio, B. A, Sheikh, A, **Bakhtyar, M.**, et al (2022) Sentiment Analysis of Roman Urdu on E-Commerce Reviews Using Machine Learning, in *Computer Modeling in Engineering and Sciences*
3. Butt, S., **Bakhtyar, M.**, Noor, W., et al., (2022) Semantic Similarity based Food Entities Recognition using WordNet. In *Journal of Intelligent & Fuzzy Systems*
4. Sabir, I., Baber, J., Ahmed, A., Sheikh, N., et al., (2022), Deep Transferable Learning on Heartbeat Classification for Imbalanced Dataset. In *Journal of Intelligent & Fuzzy Systems*. (Accepted)
5. Aimal, M., **Bakhtyar, M.**, et al., (2021), Identifying negativity factors from social media text corpus using sentiment analysis method. *arXiv preprint arXiv:2107.02175* (Accepted)
6. Nasir, M., **Bakhtyar, M.**, et al., (2021), BIOPAK Flasher: Epidemic disease monitoring and detection in

¹ Inoue, K., and Wiese, L. (2011), Generalizing Conjunctive Queries for Informative Answers. In *Proceedings of the 9th International Conference on Flexible Query Answering Systems, Lecture Notes in Artificial Intelligence*.

Pakistan using text mining . *arXiv preprint arXiv:2106.06720* (Accepted)

7. Ahmed, S., Shaikh, A., Alshahrani, H., Alghamdi, A., Alrizq, M., Baber, J., **Bakhtyar, M.**, (2021), Transfer Learning Approach for Classification of Histopathology Whole Slide Images. In *Sensors* 2021, 21, 5361. <https://doi.org/10.3390/s21165361>
8. Nawaz, A., **Bakhtyar, M.**, et al., (2020), Extractive Text Summarization Models for Urdu Language. In *Information Processing & Management*, 57, 6, 102383, 2020, Pergamon.
9. Ashraf, R., Afzal, S., Rehman, A, U., Gul, S., Baber, S., **Bakhtyar, M.**, et al., (2020), Region-of-Interest Based Transfer Learning Assisted Framework for Skin Cancer Detection, In *IEEE Access*, 8, 147858-147871, 2020, IEEE.
10. Khalid, M., Baber, J., Kasi, M, K., **Bakhtyar, M.**, et al., (2020), Empirical Evaluation of Activation Function in Deep Convolution Neural Network for Facial Expression Recognition. In *43rd International Conference on Telecommunications and Signal Processing (TSP)*, 204-207, 2020, IEEE.
11. Jan, A., Baber, J., Sanjrani, A, A., **Bakhtyar, M.**, (2020), Urdu Handwritten Character Recognition using Deep Learning. In *Journal of Information Communication Technologies and Robotic Applications*, 42-51, 2020.
12. Zahid, L., Maqsood, M., Durrani, M, Y., **Bakhtyar, M.**, et al., (2020), A Spectrogram-Based Deep Feature Assisted Computer-Aided Diagnostic System for Parkinson's Disease, In *IEEE Access*, 8, 35482-35495, IEEE.
13. Sindhu, I., Daudpota, SM., Badar, K., **Bakhtyar, M.**, et al., (2019) Aspect-Based Opinion Mining on Student's Feedback for Faculty Teaching Performance Evaluation. In *IEEE Access* 7, 108729-108741.
14. Khan, T., **Bakhtyar, M.**, Baber, J. (2019) Winning the Polio war in Pakistan: Prediction & Visualization of Polio cases. In *International Journal of Advanced Computer Science and Applications (IJACSA)* 2019.
15. Noor, F., **Bakhtyar, M.**, Baber, J. (2019) Sentiment Analysis in E-Commerce using SVM on Roman Urdu Text. In *International Conference on Emerging Technologies in Computing 2019 (iCETiC '19)* vol 285. pp 213-222 Springer 2019.
16. Afridi, B., Baber, J., Ahmed, A., **Bakhtyar, M.**, et al., (2019), Image Retrieval using Visual Phrases. In *International Journal of Advanced Computer Science and Applications*, (IJACSA), Volume 10 Issue 3, 2019.
17. Baber, J., **Bakhtyar, M.**, Ahmed, K, U., Noor, W., Devi, V., Sammad, A., (2019) Facial expression recognition and analysis of interclass false positives using CNN. In *Future of Information and Communication Conference*, 2019, 46-54. (Publisher: Springer)
18. Saeed, S., Baber, J., **Bakhtyar, M.**, et al (2018), Empirical Evaluation of SVM for Facial Expression Recognition. In *International Journal of Advanced Computer Science and Applications* (Indexed in ISI master list).
19. Muhammad, H., Baber, J., Ullah, I., Doudpota, S.M., **Bakhtyar, M.**, (2017), Video Scene Detection Using Compact Bag of Visual Word Models. In *Advances in Multimedia* (Indexed in ISI master list)
20. Baber, J., **Bakhtyar, M.**, Noor, W., Basit, A., Ihsan, U. (2016), Performance Enhancement of Patch-based Descriptors for Image Copy Detection. In *International Journal of Advanced Computer Science and Applications* (Indexed in ISI master list).
21. Fida, E., Baber, J., Akbar, A., **Bakhtyar, M.**, (2016), A Review on Image Segmentation Techniques. In *National Conference on Trends and Innovations in Information Technology (TIIT-2016)*.
22. Sanjrani, A., Baber, J., **Bakhtyar, M.**, Noor, W., Khalid, M., (2016), Handwritten Optical Character Recognition system for Sindhi numerals. In *International Conference on Computing, Electronic and Electrical Engineering (ICE Cube)*, pp 262-267 (Publisher: IEEE Computing Society)
23. Baber, J., **Bakhtyar, M.**, Ihsan, U., Rehman, M., Khalid, M., (2017), Effective Compression of Center Symmetric Local Binary Pattern. In *Mehran University Research Journal of Engineering & Technology*. Vol 36 No 2 (2017): April Issue.

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24. Fida, E., Baber, J., **Bakhtyar, M.**, Iqbal, M.J. (2015) Automatic Image Segmentation Based on Maximal Similarity Based Region Merging. In *Digital Image Computing: Techniques and Applications (DICTA 2015)*, IEEE 2015.
25. Baber, J., Fida, E., **Bakhtyar, M.**, Ashraf, H. (2015), Making Patch Based Descriptors more Distinguishable and Robust for Image Copy Retrieval. In *Digital Image Computing: Techniques and Applications (DICTA 2015)*, IEEE 2015.
26. **Bakhtyar, M.**, Dang, N., Inoue, K., Wiese, L. (2014), Implementing Inductive Concept Learning for Cooperative Query Answering. In *Data Analysis, Machine Learning and Knowledge Discovery, Studies in Classification, Data Analysis, and Knowledge Organization*, pp.127-134, Springer, 2014.
27. Baber, J., Dailey, M., Satoh, S., Afzulpurkar, N., **Bakhtyar, M.** (2014), BIG-OH: Binarization of Gradient Orientation Histograms. In *Image and Vision Computing. (JCR 2013 Impact Factor = 1.581)*.
28. **Bakhtyar, M.**, Wiese, L., Dang, N., Inoue, K. (2013), Filtering of Unrelated Answers in a Cooperative Query Answering System. In *The First International Conference on Data Engineering (DaEng-2013)*, Springer 2013.
29. **Bakhtyar, M.**, Kawtrakul, A., Baber, J., Doudpota, S.M. (2012), Creating Multilevel Class Hierarchy for Question Classification with NP analysis and WordNet. In *Journal of Digital Information Management* Vol. 10 No. 6, 2012.
30. **Bakhtyar, M.**, Kawtrakul, A., Baber, J., Doudpota, S.M. (2012), Creating Missing Classes Automatically to Improve Question Classification in Question Answering Systems. In *7th International Conference on Digital Information Management (ICDIM 2012)*, IEEE 2012.
31. **Bakhtyar, M.**, Dang, N., Inoue, K., Wiese, L. (2012), Using Conceptual Inductive Learning for Cooperative Query Answering. In *The 36th Annual Conference of the German Classification Society on Data Analysis, Machine Learning and Knowledge Discovery, Hildesheim, Germany*.
32. Baber, J., Satoh, S., Afzulpurkar, N., **Bakhtyar, M.**, (2012), Q-cslbp: Compression of cslbp descriptor. In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 7674 LNCS, 513-521. (Publisher: Springer-Verlag)
33. **Bakhtyar, M.**, and Kawtrakul, A. (2011), Integrating Knowledge sources and Shallow Language Processing for Question Classification. In *IJCNLP'11 Workshop on Knowledge and Reasoning for Answering Questions (KRAQ'11)*.
34. Baber, J., Afzulpurkar, N., and **Bakhtyar, M.**, (2011), Video segmentation into scenes using Entropy and SURF. In *IEEE International Conference on Emerging Technologies (ICET2011)*.
35. Baber, J., Afzulpurkar, N., Dailey, M.N., and **Bakhtyar, M.**, (2011), Shot Boundary Detection from Videos using Entropy and Local Descriptor. In *17th International Conference on Digital Signal Processing (DSP2011)*.

UNDERGRADUATE TEACHING

COURSES	MAIN TOPICS COVERED
Human Computer Interaction	<ul style="list-style-type: none">✓ History and the research gap✓ Design need finding✓ Prototyping (Paper, Video, Digital, Storyboards)✓ Activity Analysis✓ Direct Manipulation

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	<ul style="list-style-type: none">✓ Visual Design Components, Typography, Color, Layout✓ Design Evaluation and techniques✓ Neilson Heuristics for design evaluation
Information Retrieval and Natural Language Processing	<ul style="list-style-type: none">✓ Search Engines✓ Query-Result Relevance/Similarity✓ Result Evaluation Precision, Recall, F-measure✓ Cosine Similarity✓ TF x IDF✓ IR on Web✓ Ontologies✓ Applications of NLP✓ Probabilistic Language Models✓ Unigram, Bi gram, N-gram✓ Spelling Correction✓ POS tagging✓ Named Entity Recognition✓ Text Classification✓ Semantic Similarity of words✓ Question Answering Systems✓ Text Summarization
Web Programming	<ul style="list-style-type: none">✓ Web Concepts✓ Server Client Architecture✓ Query/Response✓ HTML✓ ASP.NET
Advance Programming Languages	Variables, Constants, Conditions, Loops, Database Connectivity, Filing, OOP Concepts, Developing Paint Brush, Developing Word Processor, Developing Client Server Chat App
Multimedia Technologies	Modes of Media, Pixel and Colors, Vector Graphics, Bitmap Images, RGB, Input and Output for Multimedia, Image Formats, Graphics

MS, Ph.D TEACHING

COURSES	MAIN TOPICS COVERED
Selected Topics in Natural Language Processing	<ul style="list-style-type: none">✓ Basic Text Processing✓ Probabilistic Language Modelling✓ Unigram, Bi gram, N-gram✓ Evaluating Language Models✓ Spelling Corrections✓ Noisy Channel✓ Semantic Similarity between Words✓ Question and Answering Systems

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	<ul style="list-style-type: none">✓ Text Classification✓ Bag of Words Model✓ Sentiment Analysis✓ Learning Lexicons✓ Naïve Bayes✓ Turney Algorithm✓ POS Tagging✓ Text Summarization and Evaluation✓ Information Extraction✓ Named Entity Recognition✓ Relation Extraction
Advance Analysis of Algorithms	<ul style="list-style-type: none">• Running time of Algorithms• Big Oh Notations• Contraction Algorithms• Loops• Graph Search• BFS, DFS• Dijkstra Algorithm• Heaps• Binary Search Trees• Hash Tables• Divide and Conquer Paradigm• Greedy Approach• Minimum Spanning Trees• Huffman Encoding• Dynamic Programming Paradigm• Bellman Ford Algorithm

PROFESSIONAL ACTIVITIES

- **Reviewer** of IEEE Access, Institute of Electrical and Electronics Engineers Journal.
- **Reviewer** of International Conference on Computing, Electronic and Electrical Engineering, ICE Cube-2021 (IEEE).
- **Microsoft Imagine Cup Judge**: Regional Final judge for Quetta Region, 2018.
- **Program Committee Member** of International Conference on Computing, Electronic and Electrical Engineering, ICE Cube-2016 (IEEE).
- **Program Committee Member** of Bahria University Journal of Information & Communication Technologies, BUJICT-2015.
- **Reviewer** of International Conference on Signal Processing and Integrated Networks, SPIN-2015 (IEEE).
- **Reviewer** of International Conference on Automation, Cognitive Science, Optics, Micro Electromechanical System, and Information Technology, ICACOMIT2015 (IEEE).

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- **Reviewer** of International Conference on Signal Processing and Integrated Networks, SPIN-2014 (IEEE).
- **CO-PI of smart classroom research project**, funded by university of Balochistan
- **Reviewer** of Journal of Digital Information Management Volume 10, Issue 7.

WORKSHOPS, EVENTS, TALKS

- **Session Organizer of “Technologies for ICT Sector” sessions** at three consecutive Invention to Innovation Summits (Balochistan, 2017–2019), featuring talks by leading professionals to foster knowledge exchange and ICT innovation.
- **Led the setup and management of the ICT Pavilion (Expo)** at the 2nd, 3rd, and 4th Invention to Innovation Summits (Balochistan, 2017–2019), coordinating with universities, startups, and industry partners to showcase innovative ICT products and solutions, attracting strong public and stakeholder engagement.
- **Guest Speaker** in a session on UI/UX Design for Computer Systems conducted by Government Innovation Lab, an initiative of Planning & Development Department (P&DD), Government of Balochistan (GoB) and supported by **United Nations Development Programme (UNDP)** (2019).
- Conducted **Two Days Workshop on Semester System at University of Balochistan (October 2016)**.
- **Active Citizenship Facilitation (2015)**. [Certified Active Citizenship Facilitator] Attended workshop on “Active Citizenship Facilitation” organized by **British Council** in Aug’ 2015
- **International Workshop on Information Search, Integration and Personalization (ISIP-2013)** attended and presented my research titled “An Integration of Multiple Knowledge Resources to Avoid Incorrect Diagnoses in Medical Question Answering Systems”²
- **Seminar on Cooperative Query Answering Systems 2011**³ presented the CoopQA project as well as the proposed framework in the seminar organized at National Institute of Informatics, **Tokyo, Japan (NII)**. The seminar consisted of three technical presentations on the NII/DAAD project of cooperative query answering in first-order knowledge bases, which has been conducted by Dr. Lena Wiese.
- **The 7th Meeting on Inference-based Hypothesis-finding and its Application to Systems Biology 2011**⁴ presented the CoopQA project as well as the proposed framework in the meeting organized at **Matsumoto, Japan**. The session related to “Query Answering” covered the details of the CoopQA project as well as the proposed framework.
- **Google DevFest 2010** Organized by Google and the talks and lab sessions covered the topics like Basics of Android, HTML5 in Chrome, Open Standards, Maps API on mobile phones.
- **Franco-Thai Workshop 2010** is the 4th intensive Summer School and collaborative Workshop on Natural Language Processing and focussed on NLP and its applications in different areas and presented the ongoing research in NLP

² <http://naist.cpe.ku.ac.th/ISIP2013/index.php>

³ http://research.nii.ac.jp/il/event/2011/110921_SEMINAR/index.html

⁴ http://research.nii.ac.jp/il/event/2011/110912_PROJECT_A/index.html

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AWARDS AND HONORS

- Selected for research internship at National Institute of Informatics, **Tokyo, Japan**, based on being “**Best doctoral candidate in the School of Engineering and Technology, AIT, (2012)**”. Development of Cooperative Query Answering System for conjunctive queries.
- Selected for research internship at National Institute of Informatics, Tokyo, Japan, project **funded by DAAD, Germany, (2011)**.
- Selected for **MS Leading to Ph.D. program**, August 2008 December 2013. – UOB Pakistan MS-leading to Ph.D scholarship, 2008 - 2013.
- Received **AIT fellowship** of 12 credits