RESUME

Dr. FATIMA TUZ ZUHRA

Ph.D. Computer Science (Artificial Intelligence) Quaid-i-Azam University Islamabad, Pakistan
Assistant Professor (Computer Science) University of Peshawar, Pakistan.
Email: fatima@uop.edu.pk
Contact No. 03419509379(Whatsapp)

ACADEMIC RECORD

2024 Ph.D. Computer Science (Artificial Intelligence)
From Quaid-i-Azam University, Islamabad
2005 – 2006 M.Phil. Computer Science (Artificial Intelligence)
From University of Peshawar.
2003 – 2005 M.Sc.. in Computer Science
From University of Peshawar.

EXPERIENCE

1. **Assistant Professor (Permanent-BPS-20) Department of Computer Science University of Peshawar (Since 2nd December, 2025)**
2. **Assistant Professor (Permanent-BPS-19) Department of Computer Science University of Peshawar (Since 30th April, 2012)**
3. **Lecturer (Permanent) Department of Computer Science University of Peshawar (1st September, 2008-29th April, 2011)**
4. **Lecturer (Contract) Computer Science Jinnah College for Women, University of Peshawar (16th November 2006-31st August 2008)**
5. **Conducted two Workshops as Resource Person titled "Use of Artificial Intelligence in Education and Research" in Centre for Human Resource Development University of Peshawar (5th-6th November 2025 and 3rd-4th December, 2025)**

POST GRADUATE RESEARCH

6. **Performed research in the Natural Language Processing field of Artificial Intelligence (AI) as M.Phil. (Computer Science) thesis entitled "A Corpus-Based Finite-State Morphological Analyzer for Pashto".**
7. **Worked in Artificial Intelligence, NLP, Machine Learning, Neural Networks, Transformers and Large Language Models as Ph.D. (Computer Science) dissertation titled "Data-Driven Transition-Based Dependency Parsing of Free Word Order Languages"**

PUBLICATIONS

1. **"Hybrid Embeddings for Transition-based Dependency Parsing of Free Word Order Languages".** *Information Processing and Management* , 15 March, 2023 , 60 (3) **(HEC Category W)-Q1 Journal**
2. **"An Accurate Transformer-Based Model for Transition-Based Dependency Parsing of Free Word Order Languages"**. *Journal of King Saud University - Computer and Information Sciences* , 21 June 2024. **(HEC Category W)- Q1 Journal**
3. **"Towards Development of New Language Resource for Urdu: The Large Vocabulary Word Embeddings". (Accepted for publication on 8th February, 2025)**. *ACM Transactions on Asian and Low-Resource Language Information Processing (TALLIP).* **(HEC Category X). Q1 Journal**
4. **"Robust Sign Language Recognition Using Hybrid Percentile-Based Outlier Aware Dynamic Range Quantization Method,"** in IEEE Access, vol. 14, pp.

32470-32488, 2026, doi: 10.1109/ACCESS.2026.3664893. **(HEC Category W).** **Q1 Journal**

5. ” A Decision Tree Based Approach for Pashto Coreference Resolution: The Case of Person Name Aliases”. VFAST Transactions on Software Engineering. Volume 13, Number 2, April-June 2025. DOI: 10.21015/vtse.v13i2.2143. **(HEC Category Y)**
6. “Compound verbs in Pashto: A Step Towards Their Computational Treatment” Pashto Academy Journal, University of Peshawar, Oct-Dec 2006, Jan-March 2007. (**HEC Category Y)**
7. “The Verbal Adjectives of Pushto from Computational Point of View” Monthly Pashto, Pashto Academy Journal, University of Peshawar, July-August-September, 2006. (**HEC Category Y)**
8. "Pashto Verbs in the Past Tense - A Computational View". Scientific Khyber, Vol 18, No.2, July, 2005, PP243-274.
9. "Towards the Computational treatment of the Pashto Verb". Scientific Khyber, Vol 18, No.1, January, 2005, PP123-141.
10. "The Morphology of Pashto Pronoun -- A Computational Perspective" Central Asia, Issue No. 58, Summer 2006. (**HEC Category Y)**
11. “A Computational Approach to the Pashto Pronoun" Peshawar University Teachers' Association Journal, Vol.13, 2006
12. “The Computational Morphology of Pashto Noun”. South Asian Language Review (SALR) Journal, India, Volume XVII. No.1. January 2007.
13. “Investigating Pashto Adjectives”. Pashto Academy Journal, University of Peshawar, September, 2007, March 2008. (**HEC Category Y)**
14. "English to Pashto Spelling Transducer". Peshawar University Teacher's Association Journal, Sciences, Vol. 15, pp39-45, 2008.
15. "Computerization of the Inflectional Morphological System of Pashto" Quarterly Research Journal, Pashto Academy, University of Peshawar, Volume 38, No. 636, April - June 2008. (**HEC Category Y)**
16. “Algorithm for developing Urdu Probabilistic Parser”. International Journal of Electrical & Computer Sciences IJECS-IJENS Vol: 12 No: 03.
17. “Implementation of Urdu Probabilistic Parser”. International Journal of Computational Linguistics (IJCL), Volume 3 : Issue 1 : 2012.
18. “Concatenative based Pashto Digits and Numbers Synthesizer”. International Journal of Computer Applications (0975 – 8887) Volume 72– No.6, May 2013. Available at: http://research.ijcaonline.org/volume72/number6/pxc3888490.pdf
19. “The Development of Pashto Speech Synthesis System”. International Journal of Computer Applications (0975 – 8887) Volume 71– No.24, June 2013. Available at: http://research.ijcaonline.org/volume71/number24/pxc3889478.pdf

MAIN FIELDS OF EXPERTISE

- Large Language Models (Llama-3-8B, Llama-3-70B, GPT2, GPT3, GPT4, T5, BERT, BART)
- Small language models (TinyLlama, T5-small)

- Huggingface transformers
- Secure finetuning (secure model finetuning with encrypted text)
- Artificial Intelligence
- Generative AI
- Agentic AI
- Natural Language Processing
- Neural Networks
- Machine Learning
- Object-Oriented Programming
- Operating Systems
- Data Structures
- Java Programming
- Python Programming
- C++, Assembly, C# and C programming
- Automata theory
- Advanced Algorithms