

MUHAMMAD ARIF
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[Google Scholar](#)
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RESEARCH INTERESTS

- Natural Language Processing
- Fake News Detection
- Mental Health and Hope Speech Analysis
- Social Media Mining
- Multilingual and Cross-Lingual NLP
- Edge Computing for Intelligent IoT Systems
- Applied Machine Learning for Smart Cities

ACADEMIC APPOINTMENTS

Jun 2024 – present

Adjunct Professor

Department of Computer Science
Colorado State University, Pueblo, USA

- Designed and taught 6 undergraduate courses
- Advised 20+ students in career planning and internships

TEACHING EXPERIENCE

Fall 2025

[CIS150: Introduction to Computer Information Systems](#)

- Prepared and delivered lectures and hands-on labs covering foundational concepts in information systems, databases, and computing applications.

Spring 2025

[CIS450/550: Advanced Data Analytics](#)

- Designed and delivered lectures and applied labs on advanced data analytics, including machine learning techniques and real-world case studies.

Spring 2025

[CIS 250: Introduction to Business Analytics](#)

- Delivered lectures and practical labs focused on data-driven decision making, analytics tools, and business-oriented datasets.

Spring 2025

[CIS120: Introduction to Programming with Python](#)

- Conducted lectures and programming labs introducing core programming concepts, data structures, and problem-solving using Python.

Fall 2024

[CIS240: System Analysis & Design](#)

- Prepared and delivered lectures and structured labs covering requirements analysis, UML modeling, and system design methodologies.

Fall 2024

[CIS289: Networking Concepts](#)

- Delivered lectures and hands-on labs on network architectures, protocols, and introductory network security concepts.

———— **INDUSTRY EXPERIENCE**

Jul 2024 – present

Field Engineer

McLane, Denver, Colorado, USA

- Applied data-driven engineering methods to optimize large-scale logistics systems.
- Collaborated with cross-functional technical teams to analyze system performance and optimize workflows.

———— **RESEARCH EXPERIENCE**

Jul 2022 – Apr 2024

Research Scholar

University of Colorado, Colorado Springs, USA

- Worked on edge computing and adaptive Machine Learning for IoT systems.
- Developed resource management frameworks for real-time distributed systems.

Jan 2024 – Aug 2024

Research Intern

The Pennsylvania State University, Abington, USA

- Mental illness classification on social media texts using deep learning and transfer learning.

Jun 2018 – Dec 2018

Research Intern

Hi-Target International Group (PVT). Ltd., Guangzhou, China

- Developed deep learning models for person re-identification using spatial and channel attention.

- Enhanced GIS-based analytics for indoor and outdoor environmental mapping.

Sep 2017 – Apr 2018 **Visiting Research Scholar**
Harbin Engineering University, China

Jun 2016 – Dec 2016 **Research Associate**
Information Technology Excellence Centre, ITEC, Peshawar
Pakistan

- Conducted research on network upgradation projects for the government health sector.

———— EDUCATION

Feb 2021 – May 2025 **PhD.** Computer Science
Centro de Investigación en Computación (CIC)
Instituto Politécnico Nacional, Mexico D.F, Mexico
Thesis: Analyzing Cognitive Information for Multi-Class and Cross-Lingual Fake News Detection Using Deep Learning
CGPA: 10.00 / 10.00, (**Distinction**)

Sep 2018 – Dec 2020 **Master of Engineering** in Geographic Information Systems (GIS)
Centro de Investigación en Computación (CIC)
Wuhan University, China
Thesis: Joint 2D–3D Feature for Indoor Semantic Segmentation of 3D Point Cloud
CGPA: 3.4/4.0 (**Distinction**)
Awards: Best Student Award; Chinese Government Scholarship

Aug 2011 – Oct 2015 **Bachelor of Science** in Telecommunication
Hazara University, Pakistan
Thesis: Solar-Powered Robotic Vehicle Controlled via 4G
CGPA: 3.6/4.0 (**Distinction**)

———— PUBLICATIONS

Peer-Reviewed Journal Articles

- **Arif, M.**, M. Shahiki Tash, A. Jamshidi, F. Ullah, & J. Kalita, (2024). Psycholinguistic and emotional analysis of hope speech. *Scientific Reports*, 14(1), 23548.

- **Arif, M.**, Ameer, I., Bölücü, N., Sidorov, G., Gelbukh, A., & Elangovan, V. (2024). Mental illness classification on social media texts using deep learning and transfer learning. *Computación y Sistemas*, 28(2), 451-464.
- Khan, R., Li, H., Basir, M., Chen, Y. L., Sajjad, M. M., Haq, I. U., ... & Hassan, W. (2022). Monitoring land use land cover changes and its impacts on land surface temperature over Mardan and Charsadda Districts, Khyber Pakhtunkhwa (KP), Pakistan. *Environmental Monitoring and Assessment*, 194(6), 409.
- Khan, R., Li, H., Afzal, Z., Basir, M., **Arif, M.**, & Hassan, W. (2021). Monitoring subsidence in urban area by PSInSAR: A case study of Abbottabad City, Northern Pakistan. *Remote Sensing*, 13(9), 1651.
- Ullah, F., Zamir, M., **Arif, M.**, Ahmad, M., Felipe-Riveron, E., & Gelbukh, A. (2024, March). Fida@ dravidianlangtech 2024: A novel approach to hate speech detection using distilbert-base-multilingual-cased. In *Proceedings of the Fourth Workshop on Speech, Vision, and Language Technologies for Dravidian Languages* (pp. 85-90).

Peer-Reviewed Conference Proceedings

- Ullah, F., Ahmed, M., Zamir, M. T., **Arif, M.**, Felipe-Riverón, E., & Gelbukh, A. (2024, March). Optimal Scheduling for the Performance Optimization of SpMV Computation using Machine Learning Techniques. In *2024 7th International Conference on Information and Computer Technologies (ICICT)* (pp. 99-104). IEEE.
- Natha, S., **Arif, M.**, Jamil, S. S., Jokhio, F. A., & Syed, M. J. (2024, April). Improving Traffic Surveillance: Deep Learning Approach for Road Anomaly Detection in Videos. In *2024 IEEE 3rd International Conference on Computing and Machine Intelligence (ICMI)* (pp. 1-7). IEEE.
- **Arif, M.**, Jamshidi, A., Ullah, F., Zamir, M. T., Gelbukh, A., & Sidorov, G. (2024, October). Identification of Fake Users in Mobile Communication Using Sentiment Analysis Techniques. In *Mexican International Conference on Artificial Intelligence* (pp. 196-210). Cham: Springer Nature Switzerland.
- **Arif, M.**, & Perera, D. G. (2023, May). Edge Computing-based Adaptive Machine Learning Model for Dynamic IoT Environment. In *2023 IEEE International Symposium on Circuits and Systems (ISCAS)* (pp. 1-5). IEEE.
- Tonja, A. L., **Arif, M.**, Kolesnikova, O., Gelbukh, A. F., & Sidorov, G. (2022, January). Detection of Aggressive and Violent Incidents from Social Media in Spanish using Pre-trained Language Model. In *IberLEF@ SEPLN*.
- **Arif, M.**, Tonja, A. L., Ameer, I., Kolesnikova, O., Gelbukh, A. F., Sidorov, G., & Meque, A. G. M. (2022, September). CIC at CheckThat!-2022: Multi-class and Cross-lingual Fake News Detection. In *CLEF (Working Notes)* (pp. 434-443).
- Tonja, A. L., Kolesnikova, O., **Arif, M.**, Gelbukh, A., & Sidorov, G. (2022, October). Improving neural machine translation for low resource languages using mixed training: The case of ethiopian languages. In *Mexican International Conference on Artificial Intelligence* (pp. 30-40). Cham: Springer Nature Switzerland.

Preprints

- Ameer, I., **Arif, M.**, G. Sidorov, H. Gómez-Adorno, & A. Gelbukh, (2022). Mental illness classification on social media texts using deep learning and transfer learning. arXiv preprint arXiv:2207.01012.

Manuscripts under Review

- **Arif, M.**, Sidorov, G., Gelbukh, A. (2025). Fake News Detection for the COVID-19 Pandemic using Large Language Models. *Scientific Reports*. (Submitted).
- Abiola, T. O., **Arif, M.**, Ojo, O. E., Oredoko, O. B., Calvo, H., Sánchez-Mejorada, C. G., Sidorov, G., Maldonado-Sifuentes, C. E. (2025). From Word Pairs to Context: Interpretable Sarcasm Detection via Contextual Collocation Augmentation (C2A). *AI in Computational Linguistics (ACLing 2025)*. (Accepted)
- Abiola, T. O., **Arif, M.**, Calvo, H. (2025). From Clusters to Characters: USERPRINT for Cross-Dataset Transfer in LLM personalization. *AI in Computational Linguistics (ACLing 2025)*. (Accepted).

AWARDS & ACHIEVEMENTS

2025	Distinction in PhD Computer Science, IPN, Mexico
2021	Conacyt Mexican Government Scholarship for PhD (CS), Mexico
2020	Best Student Award, Wuhan University, China
2018	Chinese Government for Masters in GIS

SERVICES AND AFFILIATIONS

2026	Reviewer, IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
2025, 2026	Reviewer, International Conference on Data Science for Cyber-Physical Systems Resilience using Advanced Applications (ICDCA)
2025	IEEE 5th International Conference on Computing and Machine Intelligence (ICMI)
2022 – 2025	Reviewer, Computación y Sistemas Journal
2022 – 2024	Reviewer, Frontiers in Artificial Intelligence Journal
2021 – 2023	Reviewer, Journal of Intelligent & Fuzzy Systems

COMPUTER SKILLS

Programming:	Python, C/C++, C#
Machine Learning & Deep Learning:	PyTorch, TensorFlow, Keras, Scikit-learn
NLP & Computer Vision:	Transformers, Transfer Learning, OpenCV
Tools:	LaTeX, MATLAB, Jupyter, Linux

REFERENCES

Prof. Alexander Gelbukh (Supervisor)

PhD, Full Professor and researcher
Centro de Investigación en Computación,
Instituto Politécnico Nacional, Mexico
gelbukh@cic.ipn.mx

Prof. Grigori Sidorov (Co-supervisor)

PhD, Full Professor and researcher
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Instituto Politécnico Nacional, Mexico
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Prof. Jugal Kalita

Department of Computer Science
PhD, Full Professor
University of Colorado, Colorado Springs, USA
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Dr. Iqra Ameer

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Department of Computer Science
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