

BASHEER QOLOMANY, Ph.D.

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ACADEMIC APPOINTMENTS

Dec. 2024–Present	Assistant Professor of Artificial Intelligence and Computational Medicine at Howard University College of Medicine, Washington D.C. USA
	Director, AI-Driven Computational Medicine and Smart Health (AICMSH) Laboratory
	Faculty Affiliate, Center for Applied Data Science and Analytics
	Faculty Affiliate, Center for Sickle Cell Disease
Aug. 2024 – Jan. 2025	Assistant Professor, School of Information Technology, University of Cincinnati, OH USA
Aug. 2019–Aug. 2024	Assistant Professor, Department of Cyber Systems, University of Nebraska at Kearney, NE USA
Sept. 2020-Dec. 2024	Adjunct Research Faculty, Department of Biomechanics, University of Nebraska at Omaha, NE USA
July 2023-Dec. 2024	Faculty Affiliate, Center for Intelligent Health Care, University of Nebraska Medical Center, NE USA
Feb. 2020 – Aug. 2024	Research Data Analyst, U.S. Department of Veterans Affairs, Nebraska-Western Iowa Health Care System, USA
Jan. 2024 – Oct. 2024	National Strategic Research Institute (NSRI) Fellow, NE USA
Aug. 2018–Aug. 2019	Visiting Assistant Professor, Department of Computer Science, Kennesaw State University, GA USA
Jan. 2016– Aug. 2018	Teaching Assistant & Research Assistant, Department of Computer Science, Western Michigan University (WMU), MI, USA
April 2011– Dec. 2013	Lecturer, Department of Computer Science, University of Duhok, Kurdistan Region of Iraq

EDUCATION

May 2014 – Dec. 2018	Ph.D.	Computer Science, Western Michigan University, MI, USA
May 2016 –Aug. 2018	MSc.	Computer Science, Western Michigan University, MI, USA
Sept. 2008 – Jan. 2011	MSc.	Computer Science, University of Mosul, Iraq
Sept. 2004 - July 2008	BSc.	Computer Science, University of Mosul, Iraq

JOURNAL PUBLICATIONS

1. **B. Qolomany** et al., "Predicting High-Risk Colorectal Polyps in African Americans Using Pre-Colonoscopy Clinical Features: Machine Learning Model Development and Temporal Validation," *Digestive Diseases and Sciences*, May. 29, 2026. doi: 10.1007/s10620-026-10045-1.
2. F. Kpieleh, J. B. Abdo, A. Mulahuwaish, **B. Qolomany**, and L. Hossain, "Cyber Team Performance: A Systematic Literature Review," *IEEE Access*, vol. 2026, no. 1027, 2026, doi: [10.22541/au.176159479.94557063/v1](https://doi.org/10.22541/au.176159479.94557063/v1).
3. S. Hameed, **B. Qolomany**, S. Brahim Belhaouari, M. Abdallah, J. Qadir, and A. Al-Fuqaha. "Large Language Model Enhanced Particle Swarm Optimization for Hyperparameter Tuning for Deep Learning Models." *IEEE Open Journal of the Computer Society* 6 (2025): 574–85. <https://doi.org/10.1109/OJCS.2025.3564493>.
4. A. Mulahuwaish, **B. Qolomany**, K. Gyorick, J. Bou Abdo, M. Aledhari, J. Qadir, K. Carley, and A. Al-Fuqaha. "A Survey of Social Cybersecurity: Techniques for Attack Detection, Evaluations, Challenges, and Future Prospects." *Computers in Human Behavior Reports* 18 (May 1, 2025): 100668. <https://doi.org/10.1016/j.chbr.2025.100668>.
5. M. Aledhari, R. Razzak, M. Rahouti, A. Yazdinejad, R. M. Parizi, **B. Qolomany**, M. Guizani, J. Qadir, A. Al-Fuqaha, "Safeguarding connected autonomous vehicle communication: Protocols, intra- and inter-vehicular attacks and defenses," *Computers & Security*, vol. 151, p. 104352, Jan. 2025, <https://doi.org/10.1016/j.cose.2025.104352>.
6. M Anan, K Kanaan, D Benhaddou, N Nasser, **B. Qolomany**, H Talei, A. Sawalmeh, "Occupant-Aware Energy Consumption Prediction in Smart Buildings Using a LSTM Model and Time Series Data," published in *Energies* 17(24), 6451. <https://doi.org/10.3390/en17246451>
7. **B. Qolomany**; T. J. Calay; L. Hossain; A. Mulahuwaish; J. Bou Abdo, "CCTFv2: Modeling Cyber Competitions." *Entropy* 2024, 26, 384. <https://doi.org/10.3390/e26050384>
8. M. Takallou, F. Fallahtafti, M. Hassan, A. Al-Ramini, **B. Qolomany**, I. Pipinos, S. A. Myers, and F. Alsaleem, "Diagnosis of disease affecting gait with a body acceleration-based model using reflected marker data for training and a wearable accelerometer for implementation," published in *Nature Scientific Reports journal*, 2024
9. L. Zipp, G. Mai, M. Osti, A. Al-Fuqaha, A. Mulahuwaish, **B. Qolomany**, "Toward Optimal Feature Selection: A Framework Harnessing Ensemble Metaheuristics," submitted to *Applied Soft Computing Journal*, 2023.
10. A. Mulahuwaish, M. El Khoury, **B. Qolomany**, J. Bou Abdo, S. Zeadally, "Does AI Need Guardrails?" published in *International Journal of Pervasive Computing and Communications*, Oct. 2024.
11. M. Aledhari, M. Rahouti, J. Qadir, **B. Qolomany**, M. Guizani, A. Al-Fuqaha, "Motion Comfort Optimization for Autonomous Vehicles: Concepts, Methods, and Techniques," published in *IEEE Internet of Things Journal*. June 2023
12. A. Mulahuwaish, M. Loucks, **B. Qolomany**, and A. Al-Fuqaha, "Topic Modeling Based on Two-Step Flow Theory: Application to Tweets about Bitcoin," published in *IEEE IT Professional magazine*, Feb. 2023.
13. A. Al-Ramini, M. Hassan, F. Tafti, M. Takallou, H. Rahman, **B. Qolomany**, I. Pipinos, F. Alsaleem, S. Myers, "Machine Learning-Based Peripheral Artery Disease Identification Using Laboratory-Based Gait Data," published in *Sensors*, Sept. 2022.
14. A. Mulahuwaish, S. Korbel, **B. Qolomany**, "Improving Datacenter Utilization through Containerized Service-Based Architecture," the *Journal of Cloud Computing*, vol. 11, no. 1, p. 44, Sep. 2022, doi: 10.1186/s13677-022-00319-0.
15. M. Maabreh, A. Maabreh, **B. Qolomany**, and A. Al-Fuqaha, "The robustness of popular multiclass machine learning models against poisoning attacks: Lessons and insights," *International Journal of Distributed Sensor Networks*, vol. 18, no. 7, p. 15501329221105160, Jul. 2022.

16. K. Ahmad, F. Alam, J. Qadir, **B. Qolomany**, I. Khan, T. Khan, M. Suleman, N. Said, S. Zohaib Hassan, A. Gul, M. Househ, A. Al-Fuqaha, "Global User-Level Perception of COVID-19 Contact Tracing Applications: A Data-Driven Approach Using Natural Language Processing," Accepted in *JMIR Formative Research*. March 2022.
17. M. Aledhari, R. Razzak, **B. Qolomany**, A. Al-Fuqaha, F. Saeed, "Biomedical IoT: Enabling Technologies, Architectural Elements, Challenges, and Future Directions," Accepted in *IEEE Access*, March 2022.
18. G. H. Merabet, M. Essaaidi, M. Ben-Haddou, **B. Qolomany**, J. Qadir, M. Anan, A. Al-Fuqaha, R. M. Abid, D. Benhaddou, "Intelligent Building Control Systems for Human Comfort and Energy Management: A Systematic Review of Artificial Intelligence-Assisted Techniques," *Renewable and Sustainable Energy Reviews*, vol. 144, p. 110969, Jul. 2021
19. I. Mohammed, S. Tabatabai, A. Al-Fuqaha, F. El Bouanani, J. Qadir, **B. Qolomany**, and M. Guizani, "Budgeted Online Selection of Candidate IoT Clients to Participate in Federated Learning," *IEEE Internet of Things Journal*, vol. 8, no. 7, pp. 5938–5952, Apr. 2021.
20. L. Ahmed, K. Ahmad, N. Said, **B. Qolomany**, J. Qadir, and A. Al-Fuqaha, "Active Learning Based Federated Learning for Waste and Natural Disaster Image Classification," *IEEE Access*, vol. 8, pp. 208518–208531, 2020.
21. **B. Qolomany**, I. Mohammed, A. Al-Fuqaha, M. Guizani, J. Qadir, "Trust-Based Cloud Machine Learning Model Selection For Industrial IoT and Smart City Services," *IEEE Internet of Things Journal*, vol. 8, no. 4, pp. 2943–2958, Sept. 2020.
22. **B. Qolomany**, A. Al-Fuqaha, A. Gupta, D. Benhaddou, S. Alwajidi, J. Qadir, A. Fong, "Leveraging Machine Learning and Big Data for Smart Buildings: A Comprehensive Survey," in *IEEE Access*, vol. 7, pp. 90316–90356, 2019.

CONFERENCE PUBLICATIONS

1. **B. Qolomany** et al., "Mo1346 PREDICTING HIGH-RISK COLORECTAL POLYPS USING PRECOLONOSCOPY FEATURES: MACHINE LEARNING MODEL DEVELOPMENT AND VALIDATION," DDW 2026, Chicago, IL, United States. (May 2, 2026).
2. **B. Qolomany** et al., "Abstract 4220: Predicting high-risk colorectal polyps using precolonoscopy features: Machine learning model development and validation," AACR Annual Meeting 2026, San Diego, CA, United States. (April 22, 2026).
3. J. Bou Abdo, S. Dass, **B. Qolomany**, L. Hossain, "Evolutionary Random Graph for Bitcoin Overlay Networks" *the 12th International Conference on Complex Networks and their Applications*. Menton Riviera, France, November 2023
4. M. Osti, A. Thakuri, **B. Qolomany**, and A. Mulahuwaish, "Weighted Sampled Split Learning (WSSL): Balancing Privacy, Robustness, and Fairness in Distributed Learning Environments" *The 29th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2023)*.
5. T. Calay, **B. Qolomany**, A. Mulahuwaish, and J. Bou Abdo, "CCTFv1: Computational Modeling of Cyber Team Formation Strategies," in *16th International Conference on Social Computing, Behavioral-Cultural Modeling & Prediction and Behavior Representation in Modeling and Simulation*, Pittsburgh, PA USA.
6. A. Mulahuwaish, M. Osti, K. Gyorick, M. Maabreh, A. Gupta, and **B. Qolomany**, "CovidMis20: COVID-19 Misinformation Detection System on Twitter Tweets using Deep Learning Models," in *the 14th International Conference on Intelligent Human Computer Interaction (IHCI-2022)*, 2022
7. S. Tabatabai, I. Mohammed, **B. Qolomany**, A. Albaseer, K. Ahmad, A. Al-Fuqaha, "Exploration and Exploitation in Federated Learning to Exclude Clients with Poisoned Data," in *the 18th International Wireless Communications and Mobile Computing Conference (IWCMC 2022)*, Security Symposium, Dubrovnik, Croatia, June 3, 2022.

8. **B. Qolomany**, K. Ahmad, A. Al-Fuqaha, and J. Qadir, "Particle Swarm Optimized Federated Learning For Industrial IoT and Smart City Services," in *GLOBECOM 2020 - 2020 IEEE Global Communications Conference*, Taipei, Taiwan, Dec. 2020, pp. 1–6.
9. **B. Qolomany**, A. Al-Fuqaha, D. Benhaddou, A. Gupta, "Role of Deep LSTM Neural Networks And Wi-Fi Networks in Support of Occupancy Prediction in Smart Buildings," *The 15th IEEE International Conference on Smart City (SmartCity 2017)*, Bangkok, Thailand, December 18-20, 2017
10. M. Maabreh, **B. Qolomany**, I. Alsmadi, and A. Gupta, "Deep learning-based MSMS spectra reduction in support of running multiple protein search engines on cloud," in *2017 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Kansas City, MO., 13-16 Nov. 2017, pp. 1909–1914.
11. M. Maabreh, **B. Qolomany**, J. Springstead, I. Alsmadi, and A. Gupta, "Deep vs. shallow learning-based filters of MS/MS spectra in support of protein search engines," in *2017 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Kansas City, MO., 13-16 Nov. 2017, pp. 1175–1182.
12. M. Maabreh, **B. Qolomany**, A. Gupta, and J. Springstead, "Optimizing Protein Search Engines using Particle Swarm Optimization," in *2017 IEEE 17th International Conference on Bioinformatics and Bioengineering (BIBE)*, Washington DC., 23-25 Oct. 2017, pp. 340–345.
13. **B. Qolomany**, M. Maabreh, A. Al-Fuqaha, A. Gupta, D. Benhaddou, "Parameters Optimization of Deep Learning Models using Particle Swarm Optimization," *The 13th International Wireless Communications and Mobile Computing Conference (IWCMC 2017)*, Smart Cities Symposium, Valencia, Spain, June 26-30, 2017.

PATENTS

- F. Alsaleem, M. A. Takallou, S. Myers, I. Pipinos, and B. Qolomany, "Systems and Methods for Diagnosing Peripheral Arterial Disease (PAD) Using Gait Acceleration Characteristics," US Patent 20240237902A1, Jul. 18, 2024. <https://patents.google.com/patent/US20240237902A1/en>

CERTIFICATIONS

- Culturally Responsive Teaching in STEM by ESCALA Educational services, online workshops, Jan 24, 2022.
- eCAMPUS Excellence in Online Education, University of Nebraska at Kearney (UNK), Kearney, NE, USA. June 30, 2019.
- Graduate Student Teaching Intensive Course, Western Michigan University (WMU), Kalamazoo, MI. USA. July 29, 2016.
- Course of Teaching Methods for higher education, University of Duhok (UoD), Duhok city, Kurdistan Region of Iraq. March 2012.

PROFESSIONAL MEMBERSHIPS

May 2026 – present	American College of Artificial Intelligence and Medicine
Jan. 2026 – present	America's Essential Hospitals
April 2026 – present	DC Center for AIDS Research
Dec. 2019 – present	Member of Association for Computing Machinery (ACM)
Sept. 2017 – present	Member of IEEE communications Society
Jan. 2016 – present	Member of American Federation of Teachers (AFT)
Jan. 2016 – May 2018	Member of Teaching Assistantship Union (TAU) at Western Michigan University

FACULTY DEVELOPMENT ACTIVITIES

March 2026 – Dec. 2026	Faculty Fellowship, "The Principles and Practice of Clinical Research (PPCR)," Harvard University, Boston, MA, United States
May 2026 – Sept. 2026	Faculty Fellowship, "2026 Junior Faculty Writing and Creative Works Summer Academy," Howard University, Washington, DC, United States
February 2 – 4, 2026	Workshop, "CERTaIN: Knowledge Synthesis: Systematic Reviews and Clinical Decision Making course," The University of Texas MD Anderson Cancer Center, Houston, TX, United States
May 26 – 30, 2025	Faculty Fellowship, "Faculty Development Summer Institute (FDSI) – Summer 2025," Atlanta University Center (AUC) Data Science Initiative (DSI), GA, USA.
June 8 – 14, 2020	Center for Computational Analysis of Social and Organizational Systems (CASOS) Summer Institute, Carnegie Mellon University, Pittsburgh, PA USA

TEACHING

GRADUATE COURSES (HOWARD UNIVERSITY)

Advanced Python for AI and Data Science	Graduate Capstone	Practicum/Internship
Biostatistics & Bioinformatics		

GRADUATE COURSES (UNIVERSITY OF CINCINNATI)

Data-driven Cybersecurity

UNDERGRADUATE COURSES (UNIVERSITY OF NEBRASKA)

Python for Data Analytics	Cloud Computing	Machine learning	Computer Networks
Artificial Intelligence	Interactive Web Development	Object Oriented Prog	Algorithms and data structures
Computer Security	Cyber Systems Capstone	Parallel Processing	Natural language processing

UNDERGRADUATE COURSES (KENNESAW STATE UNIVERSITY)

Operating Systems	Data Structures	Fog Computing
Big data Analytics	Cloud Computing	Computer Architecture

RESEARCH INTERESTS

Artificial Intelligence	Computational Medicine	Precision Medicine	Explainable AI
Population Health Analytics	Machine Learning	Deep Learning	Large Language Models
Natural Language Processing	Graph Representation Learning	Evolutionary Computation	Biomedical Informatics
Network Science	Digital Health	Health Equity Research	Federated Learning

CURRENT RESEARCH INITIATIVES

The AICMSH Laboratory develops artificial intelligence and data science methodologies that transform complex biomedical and population health data into clinically actionable intelligence.

The laboratory integrates Electronic Health Records, Medical Imaging, Genomics, Physiological Signals, Wearable Technologies, Public Health Data and Social Determinants of Health to advance Precision Medicine, Clinical Decision Support, Health Equity, Population Health Analytics, and Digital Health Innovation

Alzheimer's Disease Progression Modeling

Development of multimodal deep learning frameworks integrating MRI, PET, genetics, cognition, and clinical variables to predict Alzheimer's disease progression and individualized disease trajectories.

SleepAI: AI for Sleep Disorder Phenotyping

Development of AI systems using polysomnography data from approximately 8,000 patients to identify physiological sleep endotypes and support precision sleep medicine.

HIV Outcomes and Immune Function Modeling

AI-driven modeling of HIV treatment outcomes using MWCCS cohort data to identify predictors of viral suppression and immune recovery.

Colorectal Cancer Risk Stratification

Development of non-invasive AI models for colorectal cancer screening prioritization.

AI for Dermatology and Hair Loss Assessment

Development of computer vision systems for objective alopecia assessment and smart dermatology applications.

Neurovascular Dysfunction and Fall Risk Prediction

Development of explainable AI models integrating cardiovascular, neurological, gait, imaging, and cognitive data to predict mobility decline among aging adults.

SERVICES

- A Technical Program Committee (TPC) Member and a reviewer of some international conferences include:
 - IEEE Global Communications Conference (GLOBECOM)
 - International Wireless Communications and Mobile Computing Conference (IWCMC)
 - IEEE Vehicular Technology Conference (VTC),
- Regular editorial reviewer for several leading IEEE, Elsevier, and Journals Transactions, e.g.,
 - IEEE Internet of Things Journal
 - IEEE Access
 - Scientific Reports – Nature
 - Patterns – Cell Press
 - Renewable and Sustainable Energy Reviews
 - Sustainability — Open Access Journal
 - Energies MDPI.

HONORS & AWARDS

March, 2018 Department-Level Graduate Research and Creative Scholars Award. Computer Science Department. Western Michigan University

Nov. 2017 College of Engineering and Applied Science, Western Michigan University. Dean office travel grants for graduate students

MEDIA EXPERTISE

Dr. Qolomany is available to discuss:

AI in Healthcare	Computational Medicine	Precision Medicine	LLMs in Healthcare
Biomedical Data Science	Alzheimer's Disease and AI	Population Health Analytics	Wearable Technologies
HIV Analytics	Health Equity	Explainable AI	Digital Health