

Muhammad Abusaqer

Fulbright Alumnus

Assistant Professor (tenure-track), Computer Science & Cybersecurity, Minot State University

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[Google Scholar](#) | [Homepage](#) | [ORCID](#) | [LinkedIn](#) | [ResearchGate](#)

Artifacts: [Project pages & selected materials](#) (datasets, tools, slides)

Research Lab: [TRUSTWORTHY LANGUAGE INTELLIGENCE LAB \(TLI LAB\)](#)

RESEARCH SUMMARY

- **Goal:** build an externally funded research program in trustworthy NLP for security-relevant and harmful online text, emphasizing incident-centric discourse triage and prioritization.
- **Systems and artifacts:** CyberTweetGrader&Labeler (CTGL) for cyber-incident discourse prioritization; auditable dataset curation and quality measurement.
- **Methods:** reproducible benchmarking across traditional ML, transformers, and prompted LLMs; scalable, auditable pipelines for incident intelligence.

Keywords: security-aware NLP; trustworthy LLM evaluation; incident-centric OSINT triage (CTGL); human-in-the-loop labeling & dataset curation; online abuse/cyberbullying detection.

CURRENT ACADEMIC APPOINTMENT

Minot State University, Minot, ND — Assistant Professor (tenure-track) of Computer Science & Cybersecurity (Aug 2022–present)

- **Teaching:** Computer Networks, Defensive Network Security, Vulnerability Analysis, Ethical Hacking, Mobile and Wireless Security, Applied Cryptography, Web & Internet Programming, CS II, Software Engineering & Testing; Operating Systems (Spring 2026). Modalities: in-person & online; platforms: Blackboard Ultra; zyBooks/JBL Cloud Labs; Pearson MyLab, Revel; Cengage MindTAP, SAM.
- **Research:** AI/ML and NLP for security-relevant text; domain-specific evaluation; curated datasets; student mentoring (12 undergraduate coauthors, 2022–2025).
- **Service:** Faculty Senate; Academic Assessment Committee; programming competition coaching (DigiKey); department faculty hiring committee.

EDUCATION

- Ph.D., Computer Science (Cybersecurity & AI), North Dakota State University, Fargo, ND, 2025. Dissertation: CyberTweetGrader&Labeler: A Domain-Specific NLP Approach for Mining and Classifying Cybersecurity Discourse on Social Media. Advisor: Prof. Siome Ludwig.
- M.S., Computer Science and Applications, Virginia Tech, Blacksburg, VA, 2005.
- Diploma in Education (two-year, post-baccalaureate teacher-education program; completed concurrently with B.S. coursework), Birzeit University, 1995.
- B.S., Mathematics, Birzeit University, 1995. *Class rank: 2nd; GPA 3.6/4.0.*

AWARDS AND HONORS

- **FULBRIGHT FELLOWSHIP** — competitive national selection (Palestine), awarded 2001; funded M.S. study at Virginia Tech (2003–2005).
- NDSU Teaching Assistantship (2015–2021): Covered tuition and a monthly stipend.
- National Merit Scholarship (1990–1995): Full tuition support and a monthly stipend.
- Undergraduate class rank: 2nd in B.S. Mathematics, Birzeit University (1995).

GRANTS AND FUNDING (SELECTED)

- 2025–2026 · Minot State Univ. Faculty Small Grant — Expanding and Validating CyberTweetGrader&Labeler · PI & proposal author · \$4,000 · Funded.

- 2023 · Minot State Univ. Empower Grant — Cybersecurity curriculum enhancement · PI & proposal author · \$6,000 · Funded.
- 2023–2024 · ND EPSCoR — Cybersecurity NLP for the regional industry · PI & proposal author · \$40,000 · Not funded.
- 2015/2016 · Bank of Palestine (Zamalah) — Faculty development grant · Recipient & proposal author · \$30,000 · Awarded.
- 2014 · Qatari Aid Association — New campus building grant (infrastructure) · Proposal coauthor · \$1,200,000 · Awarded.
- 2008 · International Bank (via Palestinian Ministry of Education) — Strategic plan development grant · Proposal lead/coauthor · \$100,000 · Awarded.
- 2008 · AMIDEAST & U.S. Dept. of Education — Fulbright Alumni Development Grant · Recipient & proposal author · \$3,000 · Awarded.

SELECTED PUBLICATIONS

- M. **Abusaqer** and J. Saquer, “A Comparative Analysis of Transformer and Traditional ML Models for Cyberbullying Detection on Twitter (now X),” Proc. IEEE COMPSAC, 2025.
- M. **Abusaqer**, M. B. Senouci, and K. Magel, “Twitter User Sentiments Analysis: Health System Cyberattacks Case Study,” Proc. IEEE ICAIIC, 2023.
- M. **Abusaqer** and S. Ludwig, “A Curated Twitter/X Dataset of the 2020 UHS Ransomware Incident: Collection Protocols, Ethics, and Incident-Response Utility,” submitted to IEEE Access, 2025 (under review).
- M. **Abusaqer**, “A controlled evaluation of prompted LLM inference vs. fine-tuned encoders for text classification under reliability and cost constraints,” submitted to ICML 2026, Jan. 2026 (under review).
- **CyberTweetGrader&Labeler (CTGL)**: domain-specific NLP system for prioritizing cyber-incident discourse on Twitter/X (manuscript in preparation).

PUBLICATIONS

Refereed conference papers († student mentee)

- [1] M. **Abusaqer** and J. Saquer, “A Comparative Analysis of Transformer and Traditional ML Models for Cyberbullying Detection on Twitter (now X),” in Proc. 2025 IEEE 49th Annual Computers, Software, and Applications Conference (COMPSAC), Toronto, ON, Canada, 2025, pp. 1607–1612. doi: 10.1109/COMPSAC65507.2025.00216.
- [2] M. **Abusaqer**, M. B. Senouci, and K. Magel, “Twitter User Sentiments Analysis: Health System Cyberattacks Case Study,” in Proc. 2023 International Conference on Artificial Intelligence in Information and Communication (ICAIIIC), Bali, Indonesia, 2023, pp. 018–024. doi: 10.1109/ICAIIIC57133.2023.10067026.
- [3] A. Punt†, B. Olson†, and M. **Abusaqer**, “Predicting Student Academic Performance: Using Machine Learning and Clustering,” in Proc. 57th Midwest Instruction and Computing Symposium (MICS), Minneapolis, MN, USA, Apr. 4–5, 2025.
- [4] D. Degele† and M. **Abusaqer**, “Analyzing Ransomware Incidents in Healthcare: Patterns and Risk Assessment,” in Proc. 57th Midwest Instruction and Computing Symposium (MICS), Minneapolis, MN, USA, Apr. 4–5, 2025.
- [5] T. Khan† and M. **Abusaqer**, “Evaluating Quick-Commerce Platforms: A Sentiment and Topic Modeling Analysis of User Reviews,” in Proc. 57th Midwest Instruction and Computing Symposium (MICS), Minneapolis, MN, USA, Apr. 4–5, 2025.
- [6] J. Jensen† and M. **Abusaqer**, “Global Echoes of the FIFA World Cup 2022: Sentiment and Theme Analysis via Deep Learning and Machine Learning on Twitter,” in Proc. 56th Midwest Instruction and Computing Symposium (MICS), Minneapolis, MN, USA, Apr. 5–6, 2024.

- [7] S. Khan[†], K. Khan[†], and M. **Abusaqer**, “Text Detection between an AI-Written Passage vs. a Human-Written Passage,” in Proc. 56th Midwest Instruction and Computing Symposium (MICS), Minneapolis, MN, USA, Apr. 5–6, 2024.
- [8] T. Smith[†] and M. **Abusaqer**, “Predicting Campus Crime Based on State Firearm Policy,” in Proc. 56th Midwest Instruction and Computing Symposium (MICS), Minneapolis, MN, USA, Apr. 5–6, 2024.
- [9] M. **Abusaqer** and C. Fofie[†], “Cyberbullying Classification Using Three Deep Learning Models: GPT, BERT, and RoBERTa,” in Proc. 55th Midwest Instruction and Computing Symposium (MICS), Cedar Falls, IA, USA, Mar. 31–Apr. 1, 2023.
- [10] M. **Abusaqer** and Q. Sullivan[†], “Darknet Traffic Classification Using Deep Learning,” in Proc. 55th Midwest Instruction and Computing Symposium (MICS), Cedar Falls, IA, USA, Mar. 31–Apr. 1, 2023.
- [11] A. Scott[†], J. T. Snow[†], and M. **Abusaqer**, “Automated Categorization of Cybersecurity News Articles through State-of-the-Art Text Transfer Deep Learning Models,” in Proc. 55th Midwest Instruction and Computing Symposium (MICS), Cedar Falls, IA, USA, Mar. 31–Apr. 1, 2023.
- [12] M. **Abusaqer** and K. Magel, “Comparison of Students’ Learning and Engagement on an Online Course Before and After the Spread of COVID-19,” in Proc. 54th Midwest Instruction and Computing Symposium (MICS), Milwaukee, WI, USA, Apr. 1–2, 2022, pp. 251–257.
- [13] M. **Abusaqer** and K. Magel, “Teaching Computer Packages to Students Different in Everything,” in Proc. 52nd Midwest Instruction and Computing Symposium (MICS), Fargo, ND, USA, Apr. 5–6, 2019.

Technical report

- [14] Y. Bhardwaj, M. Abu-Saqer, and M. A. Pérez-Quñones, “General Interface Description of Websites Using CLICK and UIML.” Department of Computer Science, Virginia Tech. Tech. Rep. TR-04-27, 2004.

MANUSCRIPTS UNDER REVIEW / IN PREPARATION

- [15] M. **Abusaqer**, “A controlled evaluation of prompted LLM inference vs. fine-tuned encoders for text classification under reliability and cost constraints,” submitted to ICML 2026, Jan. 2026 (under review).
- [16] M. **Abusaqer**, “Green NLP for Online Abuse Detection: Accuracy–Latency–Energy Trade-offs of TF-IDF (Logistic Regression, Linear SVM) vs. Fine-Tuned Transformers,” submitted to ICCSIC 2026, Jan. 2026 (under review).
- [17] M. **Abusaqer**, “Caption-then-Classify for Multimodal Harmful Meme Detection: A Lightweight Baseline for Social-Good,” submitted to MM4SG 2026, Jan. 2026 (under review).
- [18] M. **Abusaqer** and S. Ludwig, “A Curated Twitter/X Dataset of the 2020 UHS Ransomware Incident: Collection Protocols, Ethics, and Incident-Response Utility,” submitted to IEEE Access, Dec. 2025 (under review).
- [19] M. **Abusaqer**, “TREST: Trust-Calibrated Relevance Scoring for Healthcare Cyber-Incident Tweets,” manuscript in preparation.
- [20] M. **Abusaqer** and S. Ludwig, “CyberTweetGrader&Labeler: A Domain-Specific NLP System for Prioritizing Cyber-Incident Discourse on Twitter/X,” manuscript in preparation for submission to IEEE Open Journal of the Computer Society.

RESEARCH PROJECTS

Selected Research Contributions (PI-led and recent)

- CyberTweetGrader&Labeler (CTGL): domain-specific NLP pipeline for prioritizing cyber incident discourse on Twitter/X; reproducible security-aware feature engineering, mathematically grounded relevance scoring, and labeling with an accompanying artifact package. Status: in submission/in preparation [18]–[20]. Related prior work: [2].
- Cyberbullying and abusive-language detection on Twitter/X: comparative evaluation of transformers, traditional ML, and prompted LLM inference; analysis of reliability, cost, and deployment trade-offs. Published: COMPSAC 2025 [1]. Submitted: ICML 2026 [15].

- Energy-aware benchmarking for online abuse detection: joint evaluation of accuracy, throughput/latency, and GPU energy per inference for TF-IDF baselines vs. fine-tuned transformers. Submitted: ICCSIC 2026 [16].
- Multimodal harmful meme detection: training-free caption-then-classify baseline for Hateful Memes with calibration-aware decision rules and efficiency analysis. Submitted: MM4SG 2026 [17].
- Health-system cyberattacks sentiment and theme analysis: event-focused analysis around healthcare cyber incidents with time-aware collection and ML baselines. Published: ICAIIC 2023 [2].
- COVID-era learning engagement: pre-/post-COVID comparison of engagement signals in an online course using machine learning. Published: MICS 2022 [12].
- Web UI abstractions (CLICK/UIML): technical report on interface description and transformation. VT CS TR-04-27 [14].

Selected Student-Mentored Projects

- Predicting student academic performance: supervised learning and clustering for academic risk and grouping. MICS 2025 [3].
- Ransomware in healthcare: pattern mining and risk stratification using public incident reports. MICS 2025 [4].
- Global Echoes of the FIFA World Cup 2022: sentiment and theme analysis on Twitter with DL/ML. MICS 2024 [6].
- Text detection (AI vs. human): empirical evaluation of LLM-generated vs. human-written text using lexical and syntactic baselines. MICS 2024 [7].
- Automated categorization of cybersecurity news: transfer-learning pipeline to triage security-news articles for threat-intel workflows. MICS 2023 [11].

CONFERENCE AND POSTER PRESENTATIONS

- M. **Abusaqer**, “CyberTweetGrader&Labeler: Social Media Analytics for Cyberattack Intelligence,” Oral presentation, ND EPSCoR Annual State Conference, NDSU Memorial Union, Fargo, ND, Oct. 21, 2025.
- M. **Abusaqer**, “EVPN-VXLAN Made Teachable: Datacenter Networking Labs for Early Undergraduates,” Poster presentation, ND EPSCoR Annual State Conference, NDSU Memorial Union, Fargo, ND, Oct. 21, 2025.

TEACHING (COURSES AND NEW PREPS)

Minot State University (2022–present)

- **Courses:** CSCI 330 Software Engineering & Testing; CSCI 340 Computer Networks; CSCI 410 Defensive Network Security; CSCI 415 Vulnerability Analysis; CSCI 420 Mobile & Wireless Security; CSCI 425 Applied Cryptography; CSCI 221 Web & Internet Programming; CSCI 161 CS II; Operating Systems (Spring 2026).
- **Modalities:** in-person, hybrid, and online at scale.
- **Services:** Programming Competition Coach (2022–present): Weekly training and coaching for collegiate programming contests, including DigiKey Collegiate Computing Competition (DKC³) and the MICS Programming Contest.

PREVIOUS ACADEMIC APPOINTMENTS

- North Dakota State University (NDSU), Fargo, ND — Adjunct Professor, Management Information Systems (MIS), Accounting, Finance, and MIS Dept. (Aug 2017–Aug 2021).
 - Led “Business Use of Computers,” large cohorts (450 fall & 350 spring), applied labs.
- Teaching Assistant, Computer Science Department (2015–2021).
- Al-Aqsa University (public university in Palestine) — Tenure-track Junior Lecturer/Instructor, Computer Science Dept. (Dec 2006–Aug 2015).
 - Taught: Artificial Intelligence; Computer Science I & II; Operating Systems; Web Programming.
 - Led personal initiative to the deployment of the university’s first Moodle-based LMS (installation/configuration, operational support, faculty training, documentation).
- University College of Applied Sciences (UCAS), Palestine — Instructor, Computers & Networking Dept. (2000–2006).

- Taught: Linux; Windows Server administration; Intro to Programming; Operating Systems; authored Arabic-language materials; organized computing forums.

INDUSTRY APPOINTMENTS

- Graduate Student Research Assistant / Data Scientist & Programmer — Advanced Traffic Analysis Center, Upper Great Plains Transportation Institute (UGPTI), NDSU (Jan 2022–May 2022).
 - Vehicle identification/counting on ND state roads; prototype distinguishing 13 vehicle classes.
- Intern, Researcher-Facing Track & Cyberinfrastructure of **HPC** (*High Performance Computing*) — IT Division, NDSU (Sep 2021–Dec 2021). Authored bioinformatics tutorials; wrote C-shell automation for “Thunder”/“Thunder Prime.”
- Systems Programmer & Analyst — ATS (Arab Technology Systems; acquired by Paltel), Ramallah, Palestine (Jul 1995–Sep 2000). Paradox/FoxPro/Oracle development; maintenance and performance optimization.
- Network Administrator & Technical Support (student employment) — Birzeit University IT Division, Palestine (Mar 1993–Jul 1995). Novell NetWare administration; lab LAN support; early email-system installation.

RESEARCH MENTORING († STUDENT MENTEE)

12 undergraduate coauthors, 2022–2025

- A. Punt†; B. Olson† — Student success prediction via ML and clustering (MICS 2025).
- D. Degele† — Ransomware in healthcare: patterns and risk (MICS 2025).
- T. Khan† — Quick-commerce platforms: sentiment & topic modeling (MICS 2025).
- J. Jensen† — FIFA World Cup 2022: sentiment & themes (MICS 2024).
- S. Khan†; K. Khan† — AI vs human text detection (MICS 2024).
- T. Smith† — Campus crime vs firearm policy (MICS 2024).
- C. Fofie† — Cyberbullying with GPT/BERT/RobERTa (MICS 2023).
- Q. Sullivan† — Darknet traffic classification (MICS 2023).
- A. Scott†; J. T. Snow† — Cybersecurity news categorization (MICS 2023).

PROFESSIONAL SERVICE

University and Departmental

- Faculty Senate (2024–present).
- Academic Assessment Committee (2024–present).
- Department Hiring Search Committee (2023–present).
- Leadership roles at Al-Aqsa University: Head of CS department; Vice Dean of Planning & Development; Assistant to the Dean of Graduate Studies for Research & Scholarships.

Scholarly

- Reviewer, ICML (2026–present).
- Reviewer, IEEE Access (2025–present).
- Reviewer, IEEE Open Journal of the Computer Society (2025–present).
- Reviewer, “Applied AI for Public Safety and Security” workshop at IEEE BigData 2025.
- Reviewer, IEEE BigData 2025 special session/workshop: Big Data & ML in Healthcare (Dec 8–11, 2025).
- Session Chair: ML for Business, MICS 2025; AI Classification, MICS 2024; Deep Learning, MICS 2023.
- Co-coordinator, Minot State AI & Data Summit (Apr. 29, 2024).

Community

- ChatGPT and AI Systems Presentation, Lions Club (2023).
- Fulbright Alumni speaker & organizer (2006–2014).
- American Graduates Association in Palestine & Palestinian Fulbright Alumni Association: leadership board and events (2006–2014).

OPEN-SOURCE SOFTWARE AND DATASETS

- CyberTweetGrader&Labeler (planned public release): reproducible pipeline and evaluation scripts for cyber-incident tweet prioritization; dataset schema and sample pack.
- Planned dataset release: curated posts about the 2020 Universal Health Services (UHS) ransomware cyberattack, with documentation, schema, and reproducibility artifacts.

PROFESSIONAL DEVELOPMENT AND CERTIFICATIONS

- SEED Workshop, Hands-On Labs for Security Education, Syracuse University (2018).
- CIW Web Security Associate (2013).
- Microsoft Certified: Azure Fundamentals (2021).
- National Cyber League (NCL) Competitor (2021).
- Certification in Teaching Undergraduates, NDSU (2016).
- Data Scientist's Toolbox, Johns Hopkins Univ. via Coursera (2019).
- Cisco CCNA (2006).
- Microsoft Certified System Engineer (MCSE), Windows Server (2002).
- Oracle Database OCP Certification: 8i Certified Database Administrator (2002).
- LinkedIn Training Courses: ongoing completions in AI, ML, cybersecurity.

PROFESSIONAL MEMBERSHIPS

- IEEE
- ACM

TECHNICAL SKILLS

- Programming: Python, Java, C++.
- ML/DL: PyTorch, TensorFlow; scikit-learn; experiment tracking & evaluation.
- NLP: spaCy, NLTK, Gensim, Hugging Face (BERT, RoBERTa, GPT-2/3.5).
- Security/Networking: Wireshark, Nmap, Kali/Metasploit; network security/IDS concepts.
- Data & Web: SQL, basic web stack (HTML/CSS/JS), RESTful APIs.
- LMS/EdTech: Blackboard, Moodle, YuJa/Verity.

REFERENCES

Available upon request.