

SABBIR MUHAMMAD SALEH

Software Engineering and Applied AI | Secure Cloud-Native Software Systems

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1. EDUCATION

- PhD, Computer Science** | Western University 2021 - 2026
 London, Ontario, Canada
Dissertation: AI and Blockchain-oriented Technology for Analysing Security Issues in CI/CD Logs
Supervisor: Professor Nazim H. Madhavji
Status: Successfully defended on 4 August 2026; final degree requirements expected to be completed in August 2026.
 - Research programme spanning secure CI/CD, software supply-chain security, AI-assisted log intelligence, API and identity security, and tamper-evident evidence verification.
- MSc, Computer Science** | American International University-Bangladesh 2014 - 2015
 Dhaka, Bangladesh
Specialisation: Software Engineering
Thesis: Comparative Study on Different Software Methodologies Based on Two Start-Up Companies
- BSc, Computer Science** | American International University-Bangladesh 2009 - 2013
 Dhaka, Bangladesh
Final-year project: Face Finder Android Application
Internship: Software Engineer, eAKASH BD Ltd.

2. EMPLOYMENT HISTORY

- Graduate Student Researcher** | IBM Centre for Advanced Studies May 2021 - Present
 Markham, Ontario, Canada
 - Conduct industry-linked research on secure cloud computing, CI/CD pipeline security, software supply-chain assurance, and security evidence engineering.
 - Develop AI-assisted analysis methods and cloud-based research prototypes, including the DevSecLogs demonstration environment on IBM Cloud.
- Doctoral Researcher and Graduate Fellow** | Western University Jan 2021 - Aug 2026
 London, Ontario, Canada
 - Developed a coherent doctoral programme integrating systematic reviews, empirical studies, anomaly detection, topic modelling, and evidence-integrity mechanisms.
 - Published first-author research and mentored one MSc student and eight undergraduate research students.
- Limited-Duties Lecturer** | Western University Sep 2024 - Apr 2025
 London, Ontario, Canada
 - Taught Game Development Project, a fourth-year capstone course, and Programming for Engineers, a graduate-level Python course.
 - Designed lectures, programming exercises, assessments, project milestones, and technical feedback for students from varied disciplinary backgrounds.
- Professor, Part-Time** | Fanshawe College Jan 2024 - Dec 2025
 London, Ontario, Canada
 - Taught Python Programming, Software Design Patterns, and Network Enterprise Technologies and Fundamentals through applied laboratory and project-based instruction.
- Graduate Student Teaching Assistant** | Western University May 2021 - Jul 2026
 London, Ontario, Canada
 - Completed 12 formal appointments across eight Computer Science courses, representing 1,359 assigned teaching hours.
 - Supported laboratories, tutorials, office hours, grading, examinations, instructional materials, and student consultations.
- Assistant Professor** | City University Apr 2018 - Apr 2021
 Dhaka, Bangladesh
 - Taught undergraduate Computer Science and Software Engineering courses, supervised final-year projects, and contributed to curriculum delivery and academic administration.
- Lecturer and Department Coordinator** | University of South Asia Nov 2014 - Apr 2018
 Dhaka, Bangladesh
 - Taught undergraduate computing courses, coordinated schedules and examinations, advised students, and supervised final-year software projects.

- Contributed to curriculum development, programme administration, and academic quality processes.

Lecturer | Stamford College**Jul 2014 - Nov 2014**

Dhaka, Bangladesh

- Delivered introductory computing instruction and assisted with establishing and organising a computer laboratory.

Software Engineer, Programmer and Analyst, and Database Officer | eAKASH BD Ltd.,**Aug 2013 - Oct 2014**

Krishibid Group, and Helix IT Solutions

Dhaka, Bangladesh

3. RESEARCH INTERESTS

Software Engineering: DevOps and DevSecOps, CI/CD pipelines, software supply chains, requirements-to-evidence traceability, empirical Software Engineering, software architecture, testing, and maintenance. AI for Software Engineering: anomaly detection, topic modelling, natural language processing, explainable security analytics, human-in-the-loop triage, and trustworthy AI-assisted decisions. Secure Cloud-Native Systems: cloud and container security, API and identity security, tamper-evident logging, evidence provenance, and software assurance.

4. RESEARCH CONTRIBUTIONS AND SOFTWARE ARTEFACTS

DevSecLogs: Stage-Aware CI/CD Security Evidence Framework | Lead Researcher and Developer | 2024 - Present

- Normalises heterogeneous CI/CD records into stage-aware evidence objects across source, build, test, package, deploy, and runtime stages, linking requirements, observations, reason codes, and evidence bundles.
- Supports semantic triage, anomaly-oriented prioritisation, deterministic explanations, requirements-to-evidence mapping, provenance, and digest verification. Associated outputs include IEEE ICSME 2025, ESPRE 2026, MODELS 2026, and the PhD dissertation.

AI-Based Anomaly Detection for Cloud and CI/CD Security | Research Lead | 2023 - 2024

- Developed and evaluated a CNN-LSTM-oriented approach for identifying anomalous patterns in cloud and network-security data, positioning model outputs as investigation signals rather than definitive conclusions.

Topic-Modelling Pipeline for Security-Relevant Text | Research Lead | 2023 - 2024

- Applied natural language processing and topic modelling to group security-related cloud and operational text into interpretable themes for semantic triage.

Blockchain-Augmented CI/CD Evidence Verification | Research Lead | 2023 - 2025

- Designed an architecture separating scalable off-chain evidence storage from compact tamper-evident commitments for artefact hashes, evidence digests, policy outcomes, and verification metadata.

Stage-Aware CI/CD Security Taxonomies | Lead Researcher | 2023 - 2025

- Developed complementary syntheses of container, API, identity, access-control, software supply-chain, and pipeline-integrity risks across source, build, test, package, deploy, and runtime stages.

5. PEER-REVIEWED PUBLICATIONS

5.1 Accepted and Forthcoming

- [A3] Sabbir M. Saleh, John Steinbacher, and Nazim H. Madhavji. “A Stage-Aware Tool for Modelling and Verifying CI/CD Security Evidence.” ACM/IEEE 29th International Conference on Model Driven Engineering Languages and Systems (MODELS), Tool Demonstrations, Malaga, Spain, 2026. Accepted
- [A2] Sabbir M. Saleh, Nazim H. Madhavji, and John Steinbacher. “A Stage-Aware Requirements-to-Evidence Framework for Secure CI/CD Pipelines.” Thirteenth International Workshop on Evolving Security and Privacy Requirements Engineering (ESPRE), co-located with IEEE RE, Montreal, Canada, 2026. Accepted
- [A1] Sabbir M. Saleh, Nazim H. Madhavji, and John Steinbacher. “Toward Stage-Aware Container Security in CI/CD: A Practical Review.” International Conference on Systems Engineering (ICSEng), Warsaw, Poland, 2025. In press

5.2 Published

- [P9] Sabbir M. Saleh. “DevSecLogs: AI-Powered, Tamper-Evident Log Intelligence for Secure CI/CD Pipelines.” IEEE International Conference on Software Maintenance and Evolution (ICSME), 2025, pp. 890-894. [DOI](#)
- [P8] Sabbir M. Saleh, Md. Nafiz Al Ifat, Nazim H. Madhavji, and John Steinbacher. “A Threat-Oriented Study of API Security Challenges in CI/CD Pipelines.” IEEE International Conference on Cloud Computing Technology and Science (CloudCom), 2025, pp. 1-8. [DOI](#)
- [P7] Sabbir M. Saleh, Md. Nafiz Al Ifat, Nazim H. Madhavji, and John Steinbacher. “A Defence-Oriented Study of API Security in CI/CD Pipelines.” Proceedings of the 2025 10th International Conference on Cloud Computing and Internet of Things (CCIoT), 2026, pp. 33-42. [DOI](#)

- [P6] Sabbir M. Saleh, Nazim H. Madhavji, and John Steinbacher. “Systematic Review of Identity-Centric Security in Cloud-Native CI/CD Pipelines.” Proceedings of the 2025 10th International Conference on Cloud Computing and Internet of Things (CCIoT), 2026, pp. 23-32. [DOI](#)
- [P5] Sabbir M. Saleh, Nazim H. Madhavji, and John Steinbacher. “Towards a Blockchain-Based CI/CD Framework to Enhance Security in Cloud Environments.” International Conference on Evaluation of Novel Approaches to Software Engineering (ENASE), 2025. [DOI](#)
- [P4] Sabbir M. Saleh, Ibrahim Mohammed Sayem, Nazim H. Madhavji, and John Steinbacher. “Advancing Software Security and Reliability in Cloud Platforms through AI-Based Anomaly Detection.” ACM Cloud Computing Security Workshop, co-located with ACM CCS, 2024, pp. 43-52. [DOI](#)
- [P3] Sabbir M. Saleh, Nazim H. Madhavji, and John Steinbacher. “Enhancing Cloud Security Through Topic Modelling.” IEEE/ACIS International Winter Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing, 2024, pp. 65-71. [DOI](#)
- [P2] Sabbir M. Saleh, Nazim H. Madhavji, and John Steinbacher. “A Systematic Literature Review on Continuous Integration and Deployment for Secure Cloud Computing.” International Conference on Web Information Systems and Technologies (WEBIST), 2024, pp. 331-341. [DOI](#)
- [P1] Sabbir M. Saleh, Nazim H. Madhavji, and John Steinbacher. “Blockchain for Securing CI/CD Pipeline: A Review on Tools, Frameworks, and Challenges.” 7th Conference on Cloud and Internet of Things (CIoT), 2024, pp. 1-5. [DOI](#)

6. TEACHING

6.1 Courses Taught as Instructor or Professor

Western University Game Development Project; Programming for Engineers	2024 - 2025
Fanshawe College Python Programming; Software Design Patterns; Network Enterprise Technologies and Fundamentals	2024 - 2025
City University Software Engineering and computing courses; undergraduate project supervision	2018 - 2021
University of South Asia Programming, Software Engineering, databases, networking, systems analysis, and related computing courses	2014 - 2018
Stamford College Information and Communication Technology	2014

6.2 Graduate Teaching Assistant Appointments, Western University

- Twelve appointments across eight courses, totalling 1,359 assigned hours.
- COMPSCI 1020: Summer 2026 (140 hours)
- COMPSCI 1027, Computer Science Fundamentals II: Summer 2024 (70 hours)
- COMPSCI 1032, Information Systems and Design: Summer 2021 and Summer 2024 (210 hours)
- COMPSCI 2034, Data Analytics: Principles and Tools: Winter 2023 (140 hours)
- COMPSCI 2211, Software Tools and Systems Programming: Fall 2024 and Summer 2025 (280 hours)
- COMPSCI 3307, Object-Oriented Design and Analysis: Fall 2023, Winter 2024, and Summer 2024 (309 hours)
- COMPSCI 4471, Software Design and Architecture: Fall 2022 (140 hours)
- COMPSCI 4473, Software Requirements Engineering: Winter 2026 (70 hours)
- Confirmed future teaching: COMPSCI 1037A, Computer Science Fundamentals I, Fall 2026.

6.3 Teaching Approach and Areas Prepared to Teach

Approach: structured problem-solving, active practice, project-based assessment, realistic software-development decisions, and timely formative feedback. Prepared to teach: introductory programming in C and Python; data structures; systems programming; databases; Software Engineering; requirements; architecture; testing; project management; DevOps and DevSecOps; secure CI/CD; cloud security; and AI for Software Engineering.

7. STUDENT SUPERVISION AND RESEARCH MENTORING

7.1 Graduate Research Mentoring

Md Nafiz Al Ifat, MSc in Computer Science Western University	2025
• Research mentoring in CI/CD API security, including review protocol development, data extraction, classification, synthesis, visualisation, and manuscript preparation. • Research resulted in two peer-reviewed publications at IEEE CloudCom 2025 and CCIOT 2025.	

7.2 Undergraduate Research Mentoring, Western University

Disha Puri and Marc Crasto: Automation Tools for Secure CI/CD Pipelines: A Systematic Literature Review.	2025
Aun Mirza and Nasri Hussein: Container Security in Cloud CI/CD Pipelines: A Systematic Literature Review.	2025
Yuxuan Xie and Michael Zhang: Authentication and Authorisation Mechanisms in Cloud CI/CD Pipelines: A Systematic Literature Review.	2025
Daniel Szabo: Enhancing Cloud Security through Topic Modelling.	2024
Isra'a Al-Abbasi: Enhancing Security in CI/CD Pipelines Using Blockchain Technology.	2024

7.3 Capstone and Final-Year Project Supervision

- Supervised approximately 25 fourth-year students completing team-based Game Development Project work at Western University.
- Supervised more than 50 undergraduate students across individual and team-based final-year projects in earlier academic appointments.

8. SCHOLARSHIPS, FELLOWSHIPS, AND INSTITUTIONAL RESEARCH SUPPORT

Western Graduate Research Scholarship Western University	2021 - 2024
• Documented value: CAD 22,291. Internal scholarship supporting doctoral research in Computer Science.	
Graduate Fellowship Western University	2022 - 2025
• Documented value: CAD 22,050. Fellowship support for doctoral research and programme completion.	
Total documented doctoral scholarship and fellowship support: CAD 44,341.	

9. SELECTED RESEARCH PRESENTATIONS, POSTERS, AND DEMONSTRATIONS

A Stage-Aware Tool for Modelling and Verifying CI/CD Security Evidence MODELS 2026 Tool Demonstrations, Malaga, Spain	2026
A Stage-Aware Requirements-to-Evidence Framework for Secure CI/CD Pipelines ESPRE 2026, co-located with IEEE RE, Montreal, Canada	2026
Explainable and Tamper-Evident CI/CD Log Intelligence for Responsible AI Deployment AISSH-26 poster and research showcase, Western University	2026
DevSecLogs: AI-Powered, Tamper-Evident Log Intelligence for Secure CI/CD Pipelines IEEE ICSME	2025
Towards a Blockchain-Based CI/CD Framework to Enhance Security in Cloud Environments ENASE	2025
Advancing Software Security and Reliability in Cloud Platforms through AI-Based Anomaly Detection ACM CCSW, co-located with ACM CCS	2024
Enhancing Cloud Security Through Topic Modelling IEEE/ACIS SNPD-Winter	2024
DevSecLogs and related research prototypes IBM Cloud demonstration environment and academic research demonstrations	2024 - 2026

10. ACADEMIC, PROFESSIONAL, AND COMMUNITY SERVICE

10.1 Conference and Journal Reviewing

- Programme Committee Member and Reviewer, Tool Demonstration and Data Showcase Track, IEEE International Conference on Software Maintenance and Evolution (ICSME 2026).
- Reviewer, International Conference on Computing Advancements (ICCA 2026).
- Reviewer for conferences and workshops including REFSQ, IEEE RE, ACDSA, IHTC, ENASE, SEAA, and ICRAIE.
- Reviewer for Information and Software Technology, IEEE Transactions on Computational Social Systems, IEEE Access, International Journal of Information Technology and Web Engineering, Journal of Computer Science, and Advances in Science, Technology and Engineering Systems Journal.

10.2 Editorial Service

- Editorial Board Member, International Journal of Information Technology and Web Engineering.
- Assistant Editor, Bangladesh Journal of Public Health.

10.3 University Governance and Academic Leadership

- Senate Member, Graduate Student Constituency, Western University, July 2024 - June 2025.
- Councillor and committee contributor, Society of Graduate Students, Western University.

- Former President and Assistant General Secretary, AIUB Oratory Club; leadership in debate, public speaking, facilitation, and student engagement.
- Coach, State University of Bangladesh Inter-University Programming Contest team, 2015; contributed to convocation and academic-event coordination in 2017 and 2019.

10.4 Community Engagement and Digital Communications

- Newsletter and Digital Communications Lead, Muslim Circle of Canada, 2025 - Present: developed and maintained a web-based newsletter platform and coordinated contributors, monthly issues, and audience engagement.
- Programme and digital-communications support, Muslim Circle of Canada Convention 2026: contributed to event planning, recognition activities, participant surveys, youth programming, and stakeholder communication.

11. TECHNICAL EXPERTISE AND PROFESSIONAL DEVELOPMENT

Software Engineering: DevOps and DevSecOps; requirements engineering; software architecture and design; software testing and maintenance; software supply-chain security; empirical Software Engineering; systematic reviews and mapping studies.

Artificial Intelligence and Data Analytics: machine learning; deep learning; natural language processing; topic modelling; anomaly detection; CNN-LSTM architectures; explainable AI; empirical evaluation.

Cloud, Security, and CI/CD: IBM Cloud; Microsoft Azure; Google Cloud Platform; Docker; Kubernetes; GitHub Actions; Jenkins; API security; identity and access management; container security; Hyperledger Fabric; tamper-evident verification.

Programming and Development: Python; C; C++; Java; JavaScript; PHP; SQL; HTML; CSS; Git; GitHub; Jupyter; LaTeX; Overleaf.

- Intellectual Property Strategy Boot Camp, Western University Faculty of Law and WORLDDiscoveries, Fall 2023.
- Training in accessible teaching, academic integrity, workplace safety, and university teaching-assistant responsibilities.

12. PROFESSIONAL MEMBERSHIP

- IEEE Graduate Student Member in good standing through December 2026.

Last updated: 6 August 2026