Md Ahasanuzzaman

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Research Interests

My research focuses on uncovering novel insights and innovative solutions to critically challenged and widely recognized problems in software engineering. Specifically, I am dedicated to advancing the productivity of software practitioners through the automation of various software development tasks. My research revolves around developing methodologies and tools that harness software artifacts, data analytics and AI to support various software maintenance processes – such as recommending appropriate code reviewers and predicting defect-prone modules – thereby alleviating the workload of practioners and improving overall software quality. Through the integration of artificial intelligence (AI)techniques, natural language processing (NLP), and rigorous empirical analysis of large-scale data and mining software repositories, I aim to address critical challenges in developer engagement, software quality assurance, issue management, and empirical ecosystem analysis.

Education

- **Ph.D. In Computing, Queen's University, Kingston, ON, Canada** *Sep. 2019 - Present*
  Dissertation: Knowledge Units of Programming Languages – A Novel Perspective for Leveraging Source Code to Support Software Engineering Tasks
  Advisor: Prof. Ahmed E. Hassan
  ◦ Recipient of the ***Duncan and Urlla Carmichael Fellowship***
  ◦ CGPA: 4.00/4.30
- **M.Sc. In Computing, Queen's University, Kingston, ON, Canada** *Sep. 2017 - Aug. 2019*
  Thesis: Studying the Integration Practices and the Evolution of Ad Libraries in the Google Play Store
  Advisor: Prof. Ahmed E. Hassan
  ◦ CGPA: 4.10/4.30
- **B.Sc. In Computer Science & Engineering, University of Dhaka, Bangladesh** *Feb. 2010 - Feb. 2014*
  Thesis: Target Coverage Through Distributed Clustering in Directional Sensor Networks
  Advisor: Prof. Md Abdur Razzaque
  ◦ Recipient of the prestigious **Gold Medal** awarded by the Prime Minister of Bangladesh & **Deans Excellence Award**
  ◦ CGPA: 3.97/4.00 (**Ranked 1st** among 68 students)

Publications

11 peer-reviewed publications: **7 journal papers** (**TSE**, **EMSE**, etc) including 3 papers accepted in the **Journal-First track at ICSE**, and **4 conference papers** (MSR, SANER, etc.). Additionally, one paper is currently under review in the EMSE journal.

A. Articles published in peer-reviewed journals

[1] **Md Ahasanuzzaman**, Gustavo A Oliva, and Ahmed E Hassan. Predicting long time contributors with knowledge units of programming languages: an empirical study. ***Empirical Software Engineering (EMSE)***, *April 3, 2025.*

[2] **Md Ahasanuzzaman**, Gustavo A Oliva, and Ahmed E Hassan. Using knowledge units of programming languages to recommend reviewers for pull requests: an empirical study. ***Empirical Software Engineering (EMSE)***, *pp. 1–33, 2024.* [🏆Accepted to the Journal-First track, ICSE 2025]

[3] Islem Saidani, Ali Ouni, **Md Ahasanuzzaman**, Safwat Hassan, Mohamed Wiem Mkaouer, and Ahmed E Hassan. Tracking bad updates in mobile apps: A search-based approach. ***Empirical Software Engineering (EMSE)***, *pp. 1–81, 2022.*

[4] **Md Ahasanuzzaman**, Safwat Hassan, and Ahmed E Hassan. Studying Ad Library Integration Strategies of Top Free-to-Download Apps. ***IEEE Transactions on Software Engineering (TSE)***, *pp. 209–224, 2020.* [🏆Accepted to the Journal-First track, ICSE 2021]

[5] **Md Ahasanuzzaman**, Safwat Hassan, Cor-Paul Bezemer, and Ahmed E Hassan. A longitudinal study of popular ad libraries in the Google Play Store. ***Empirical Software Engineering (EMSE)***, *pp. 824–858, 2019.* [🏆Accepted to the Journal-First track, ICSE 2020]

[6] **Md Ahasanuzzaman**, Muhammad Asaduzzaman, Chanchal K. Roy, and Kevin A. Schneider. CAPS: a supervised technique for classifying Stack Overflow posts concerning API issues. ***Empirical Software Engineering (EMSE)***, *pp. 1493–1532, 2019.*

[7] Md. Mofijul Islam, **Md Ahasanuzzaman**, Md. Abdur Razzaq, and Yang Xiang. Target coverage through Distributed Clustering in Directional Sensor Networks. ***EURASIP Journal on Wireless Communications and Networking (EURASIP)***, *pp. 64005–64014, 2015.*

B. Articles published in peer-reviewed conferences

[8] **Md Ahasanuzzaman**, Muhammad Asaduzzaman, Chanchal K. Roy, and Kevin A. Schneider. Classifying Stack Overflow Posts on API Issues. *In Proceedings of the **IEEE 25th International Conference on Software Analysis, Evolution and Reengineering (SANER)**, pp. 244–254, 2018.* [🏆 Received an invitation to SANER special issue, recognized as one of the highest rated and most intriguing papers]

[9] Muhammad Asaduzzaman, **Md Ahasanuzzaman**, Chanchal K. Roy, and Kevin A. Schneider. How developers use exception handling in Java?. *In Proceedings of the **IEEE 13th Working Conference on Mining Software Repositories (MSR)**, pp. 516–519, 2016.*

[10] **Md Ahasanuzzaman**, Muhammad Asaduzzaman, Chanchal K. Roy, and Kevin A. Schneider. Mining Duplicate Questions in Stack Overflow. *In Proceedings of the **IEEE 13th Working Conference on Mining Software Repositories (MSR)**, pp. 402–412, 2016.*

[11] Md. Mofijul Islam, **Md Ahasanuzzaman**, Md. Abdur Razzaq, Mohammad Mehedi Hassan, and Atif Alamri. A Distributed Clustering Algorithm for Target Coverage in Directional Sensor Networks. *In Proceedings of the **IEEE Asia Pacific Conference on Wireless and Mobile (APWiMob)**, pp. 42–47, 2014.*

C. Articles under review in journals

[12] **Md Ahasanuzzaman**, Gustavo A Oliva, Ahmed E Hassan, and Zhen Ming. Predicting post-release defects with knowledge units (KUs) of programming languages: an empirical study. ***Under review: Empirical Software Engineering (EMSE)**, 2025.*

D. Articles under preparation

[13] Studying the Code Concepts used in evaluating LLMs for Code Generation Tasks Using Knowledge Units of Programming Languages - An Empirical Study

[14] Analysis of Android API Usage for Open-Source Apps

[15] Evaluating and Improving the Engineering Rigour of Using Active Learners in Software Analytics - A Case Study on Labelling Bug-fix Commits

Presentations and Invited Talks

[1] **Md Ahasanuzzaman**, Gustavo A Oliva, Ahmed E Hassan. Knowledge Units of Programming Languages: A New Perspective for Studying the Source Code of Software Systems. *Poster Presentation at the Consortium for Software Engineering Research (CSER), Spring Meeting, Queen's University, Kingston, Canada, 2024.*

[2] **Md Ahasanuzzaman**, Gustavo A Oliva, Ahmed E Hassan. Using Knowledge Units of Programming Languages to Recommend Reviewers for Pull Requests: An Empirical Study. *Poster presentation at the Consortium for Software Engineering Research (CSER), Spring Meeting, Montreal, Quebec, Canada, 2023.*

[3] **Md Ahasanuzzaman**, Safwat Hassan, and Ahmed E Hassan. Studying ad library integration strategies of top free-to-download apps. *Journal First Paper (oral presentation) at the 43rd International Conference on Software Engineering (ICSE), Seoul, South Korea (virtual), 2021.*

[4] **Md Ahasanuzzaman**, Safwat Hassan, and Ahmed E Hassan. A longitudinal study of popular ad libraries in the Google Play Store. *Journal First Paper (oral presentation) at the 42nd International Conference on Software Engineering (ICSE), Madrid, Spain (virtual), 2020.*

[5] **Md Ahasanuzzaman**. Studying the Integration Practices and the Evolution of Ad Libraries in the Google Play Store. *M.Sc. Thesis, Queen's University, Kingston, Canada, 2019.*

Teaching Experience

- **Queen's University, Kingston, Canada** *Jan. 2018 - Present*
  Teaching Assistant (TA), School of Computing
  - CISC 322/326: Software/Game Architecture (Fall 2018, 2019, & 2023)
    - **I served as the Head Teaching Assistant** for this course, where I collaborated with the instructor to prepare course materials, **deliver lectures on large-scale software systems and modern code analysis tools** and coordinate a team of three TAs to manage and support a class of 150 students.
    - Graded assignments and quizes.
    - Mentored 36 students annually on their course projects throughout each year.
  - CISC 271: Linear Data Analysis (Winter 2018 & 2020)
    - **Instructed tutorial session** on MATLAB. Graded assignments and quizes.
  - CISC/CMPE 457: Image Processing and Computer Vision (Winter 2019), CMPE 452: Neural and Genetic Cognitive Models (Fall 2020), CISC 447: Introduction to Cybersecurity (Fall 2022), CISC 454: Computer Graphics (Winter 2021, 2022, 2023, 2024 & 2025)
    - Graded assignments and quizes.

- **Ahsanullah University of Science and Technology, Dhaka, Bangladesh** *Aug. 2014 - Aug. 2017*
  Lecturer, Department of Computer Science and Engineering
  - CSE 1205: Object Oriented Programming (Jan. 2015 – Dec. 2016) - **Course Instructor and Course Designer**
  - CSE 4125: Distributed Database System (Jan. 2017 – Aug. 2017) – **Course Instructor**
  - CSE 4126: Distributed Database Systems Lab, CSE 2202: Numerical Methods Lab, CSE 1206: Object Oriented Programming Lab, CSE 2214: Assembly Programming Language (Aug. 2014 – Aug. 2017) - Lab Instructor
  - **Administrative Responsibilities:** Played a key role as a core member of the Undergraduate Admission team in 2016, overseeing critical admission processes and ensuring smooth operations. Also served as a member of the Exam Committee, responsible for coordinating and managing exam-related activities, maintaining academic integrity, and ensuring efficient execution of examinations.
- **University of Liberal Arts Bangladesh (ULAB), Dhaka, Bangladesh** *Aug. 2014 - Nov. 2014*
  Adjunct Lecturer, Department of Computer Science and Engineering
  - CSE 417: Automata and theory of Computation (Aug. 2014 - Nov. 2014) - **Course Instructor**

Industrial Experience

- **Huawei Technologies Canada Co., Ltd., Kingston, Canada** *Nov. 2020 - Oct. 2021*
  Engineer, Intern
  - Developed an automated classification approach leveraging BERT, a state-of-the-art large language model (LLM). Fine-tuned the BERT model using Common Vulnerabilities and Exposures (CVEs) from the National Vulnerability Database (NVD) to improve the classification of vulnerability-related issue reports. Identifying such issue reports is important, as leaked vulnerability information can be exploited by attackers to launch zero-day attacks.
  - Worked on another project focused on automating the labeling of bug-fixing commits to improve the performance of post-release bug prediction. Proposed and designed a simplified solution that outperformed existing approaches, including active learning and keyword-based methods.

Academic Services

- **Journal Reviewer**
  I have actively served as a reviewer for the following peer-reviewed journals.
  - Journal of Software: Evolution and Process 2024, 2025
  - Knowledge-Based Systems 2023
  - E-Informatica Software Engineering Journal (EISEJ) 2024,2025
  - SoftwareX 2024

Awards & Achievements

- **Graduate Research Fellowship** *Sep. 2019 – Present*
  Institutional, Queen's University, Canada
  - Awarded a Graduate Research Fellowship totaling $140,000 CAD for graduate studies.
- **ACM SIGSOFT CAPS Travel Grant ICSE 2025** *Mar. 2025*
  International, ACM Association
  - $780 CAD awarded for attending ICSE 2025 in Ottawa, Canada.
- **Duncan and Urlla Carmichael** *Sep. 2021 – Aug. 2022*
  Institutional, Queen's University, Canada
  - $10,000 CAD scholarship awarded for outstanding academic achievement and consistent performance during graduate studies.
- **ACM SIGSOFT Travel Grant ICSE 2019 SMEW** *Oct. 2019*
  International, ACM Association
  - $1,000 CAD awarded for attending ICSE 2019 student mentorship program in Montreal, Canada.
- **Graduate Research Fellowship** *Sep. 2017 – Aug. 2019*
  Institutional, Queen's University
  - Awarded a Graduate Research Fellowship totaling $50,000 CAD for graduate studies.
- **Prime Minister Gold Medal** *Mar. 2017*
  National, Government of Bangladesh
  - Gold Medal awarded by the **Honorable Prime Minister of Bangladesh** for **ranking 1st** among all students in the Engineering Department at University of Dhaka based on the academic result in B.Sc. studies.
- **Dean's Award** *May 2016*
  Institutional, University of Dhaka, Bangladesh
  - Awarded for excellent result in undergraduate study at University of Dhaka.
- **M. Lutfar Rahman Award** *Dec. 2015*
  Institutional, University of Dhaka, Bangladesh

◦ $500 CAD awarded for securing the top position in the Department of Computer Science & Engineering on academic excellence.

- **Trust Fund Scholarship** *July 2015*
  Institutional, University of Dhaka, Bangladesh
  ◦ $500 CAD awarded for maintaining strong academic performance during undergraduate studies.
- **UGC Scholarship** *Mar. 2014*
  National, Educational Board, Bangladesh
  ◦ Nominated for the scholarship for excellent academic performance.
- **HSC Scholarship** *Jan. 2010– Dec. 2014*
  National, Educational Board, Bangladesh
  ◦ Scholarship awarded for excellent academic result in the Higher Secondary School Certificate Examination.
- **SSC Scholarship** *Dec. 2007*
  National, Educational Board, Bangladesh
  ◦ Scholarship awarded for excellent academic result in the Secondary School Certificate Examination.

Leadership and Volunteering Activities

Vice President of University Affairs *Oct. 2023 - Oct. 2024*
Queens' Graduate Computing Society, Queen's University, Canada
◦ Worked alongside the President to represent graduate computing students in university-wide committees and meetings
◦ Advocated for academic, administrative, and community-related concerns to relevant university bodies
◦ Acted as a liaison between the society and the School of Graduate Studies to ensure alignment with institutional policies and student needs
◦ Organized events (e.g., Graduate Orientation) and helped maintain transparent communication with department and student organizations

Head Teaching Assistant (Head TA) *Sep. 2019 - Dec. 2019*
Queen's University, Canada
◦ Led a team of TAs, coordinated grading workflows, and served as the primary liaison between the instructor and teaching staff

Competitive Programming Contest Coordinator and Organizer *Jan. 2015 - Feb. 2017*
Ahsanullah University of Science and Technology, Bangladesh
◦ Leading a team of 20 individual to successfully organize and manage inter-university programming contests

Volunteer, Consortium for Software Engineering Research (CSER) *June 2024*
Queen's University, Canada
◦ Supported the organization and logistics of the Consortium for Software Engineering Research (CSER), assisting with session coordination, registration, and participant support.

Member, Queen's Bangladeshi Students' Association (QBSA) *Sep. 2018 - Aug. 2022*
Queen's University, Canada
◦ Actively worked to support various cultural and community events organized by QBSA

Volunteer, CommunityAction *Jan. 2010 - July 2013*
Dhaka, Bangladesh
◦ Volunteered to help organize and carry out a community food distribution program for underserved populations.

References

1. **Ahmed E. Hassan**
   Professor
   Mustafa Prize Laureate, ACM Fellow, IEEE Fellow, NSERC Steacie Fellow, Canada Research Chair
   School of Computing, Queens University, Canada
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   Phone: 1-613-533-3337
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2. **Bram Adams**
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   Phone: 1-613-533-6763
   Website: https://mcis.cs.queensu.ca/bram.html

3. **Gustavo Ansaldi Oliva**
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4. **Safwat Hassan**
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