SAIKAT MONDAL

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Homepage Google Scholar ResearchGate LinkedIn

CAREER OBJECTIVES

My career objectives are – (1) conducting cutting-edge and impactful research in the area of Software Engineering and consistently challenging myself with robust, timely, emerging research problems, (2) promoting **novel, cost-effective, efficient, sustainable solutions**, (3) honing my research, development, and supervision skills through continuous learning, active collaborations, and extensive self-reflection.

EDUCATION

Doctor of Philosophy, Computer Science/Software Engineering
University of Saskatchewan, Canada
May 2020 – May 2024 (Expected)
Course Average: **93.50%**
Advisor: Prof. Dr. Chanchal K. Roy
Awards: **Dr. Keith Geddes Award 2022** + **GSA Research Excellence in STEM Award 2022** + **Citizenship Award 2021** + **Best Paper Award (ISEC 2022)** + Dr. Keith Geddes Award 2021 (Nomination) + Carl McCrosky Innovation Scholarship 2021 & 2022 (Nomination)

Master of Science, Computer Science/Software Engineering
University of Saskatchewan, Canada
May 2018 – April 2020
Course Average: **92.00%**
Thesis: Investigating the Quality Aspects of Crowd-Sourced Developer Forum: A Case Study of Stack Overflow
Advisor: Prof. Dr. Chanchal K. Roy
Awards: **University of Saskatchewan Graduate Thesis Award 2020** + **Research Excellence Award 2020 (CS)** + **Dr. Keith Geddes Award 2020** + Dr. Keith Geddes Award 2019 (Nomination)

PUBLICATIONS

[1] **Saikat Mondal**, G. Uddin, and C. K. Roy, *"Automatic Prediction of Rejected Edits in Stack Overflow"*. 45th International Conference on Software Engineering (**ICSE 2023** Journal-First Track), Melbourne, Australia, May 2023.

[2] **Saikat Mondal**, M. M. Rahman and C. K. Roy, *"Do Subjectivity and Objectivity Always Agree? A Case Study with Stack Overflow Questions"*. 20th International Conference on Mining Software Repositories (**MSR 2023**), pp. 13, Melbourne, Australia, May 2023.

[3] **Saikat Mondal**, G. Uddin, and C. K. Roy, *"Automatic Prediction of Rejected Edits in Stack Overflow"*. Empirical Software Engineering Journal (**EMSE**), pp. 46. (Impact Factor = **4.1**), September 2022. (Selected as the **weekly top** article in the Artificial Intelligence category in Doctor Penguin)

[4] **Saikat Mondal**, M. M. Rahman, C. K. Roy, and K. Schneider, *"The Reproducibility of Programming-Related Issues in Stack Overflow Questions"*. Empirical Software Engineering Journal (**EMSE**), pp. 59. (Impact Factor = **4.1**), December 2021

[5] **Saikat Mondal**, G. Uddin, and C. K. Roy, *"Automatic Assistance for Rollback Edit Inconsistencies in Stack Overflow"*. Transactions on Software Engineering and Methodology Journal (**TOSEM**), pp. 38. (Submission Number: TOSEM-2022-0109) (Under Major Revision)

[6] **Saikat Mondal**, D. Mondal and C. Roy, *"Investigating Technology Usage Span by Analyzing Users' Q&A Traces in Stack Overflow"*. 30th Asia-Pacific Software Engineering Conference (**APSEC 2023**), Seoul, Korea, December 2023 (Accepted)

[7] **Saikat Mondal**, and B. Roy, *"Reproducibility of Issues Reported in Stack Overflow Questions: Challenges, Impact & Estimation"*. Journal of Systems & Software (**JSS**), pp. 42. (Submission Number: JSSOFTWARE-D-22-00537R1) (Under Major Revision)

[8] **Saikat Mondal**, M. M. Rahman, and C. K. Roy, *"Can We Identify Stack Overflow Questions Requiring Code Snippets? Investigating the Cause & Effect of Missing Code Snippets"*. International Conference on Software Analysis, Evolution and Reengineering (**SANER 2024**) (Under Review)

[9] S. N. Pinku, **Saikat Mondal**, B. Roy, D. Mondal and C. Roy, *"An Empirical Study on Python Version Migration Challenges Reported at Stack Overflow Questions"*. International Conference on Software Analysis, Evolution and Reengineering (**SANER 2024**) (Under Review)

[10] S. Roy, G. Laberge, B. Roy, F. Khomh, A. Nikanjam, and **Saikat Mondal**, *"Fostering Consensus in Post-hoc Explanations for Machine Learning-Driven Defect Prediction: An Empirical Investigation"*. International Conference on Software Analysis, Evolution and Reengineering (**SANER 2024**) (Under Review)

[11] S. Roy, **Saikat Mondal**, B. Roy, and C. Roy, *"From Questions to Insights: Exploring XAI Challenges Reported on Stack Overflow Questions"*. International Conference on Mining Software Repositories (**MSR 2024**) (Under Review)

[12] **Saikat Mondal**, and B. Roy, *"Reproducibility Challenges and Their Impacts on Technical Q&A Websites: The Practitioners' Perspectives"*. ACM 15th Innovations in Software Engineering Conference (ISEC 2022), pp. 11, DA-IICT Gandhinagar, India, February 2022. (ISEC 2022 **Best Paper** Award ↗)

[13] S. Roy, G. Laberge, B. Roy, F. Khomh, A. Nikanjam and **Saikat Mondal**, *"Why Don't XAI Techniques Agree? Characterizing the Disagreements Between Post-hoc Explanations of Defect Predictions"*. International Conference on Software Maintenance and Evolution (**ICSME 2022** NIER track), pp. 5, Limassol, Cyprus, October 2022.

[14] **Saikat Mondal**, G. Uddin and C. K. Roy, *"Rollback Edit Inconsistencies in Developer Forum"*. IEEE 18th International Conference on Mining Software Repositories (**MSR 2021**), pp. 12, Madrid, Spain, May 2021.

[15] **Saikat Mondal**, C M K. Saifullah, A. Bhattacharjee, M. M. Rahman, and C. K. Roy, *"Early Detection and Guidelines to Improve Unanswered Questions on Stack Overflow"*. ACM 14th Innovation in Software Engineering Conference (ISEC 2021), pp. 11, Bhubaneswar, India, February 2021

[16] **Saikat Mondal**, G. Uddin and C. K. Roy, *"Automatic Identification of Rollback Edit with Reasons in Stack Overflow Q&A Site"*. In Proceeding of the 36th IEEE International Conference on Software Maintenance and Evolution (**ICSME 2020** RR Track), pp. 856-856, Adelaide, Australia, September 2020.

[17] **Saikat Mondal**, M. M. Rahman and C. K. Roy, *"Can Issues Reported at Stack Overflow Questions be Reproduced? An Exploratory Study"*. In Proceeding of the IEEE 16th International Conference on Mining Software Repositories (**MSR 2019**), pp. 479-489, Montreal, Canada, May 2019.

[18] M. Raihan, P.K. Mandal, M. M. Islam, T. Hossain, P. Ghosh, S.A. Shaj, A. Anik, M. R. Chowdhury, **Saikat Mondal**, and A. More, *"Risk Prediction of Ischemic Heart Disease Using Artificial Neural Network"*. In Proceeding of the International Conference on Electrical, Computer and Communication Engineering (ECCE 2019), pp. 1-5, Bangladesh, February 2019

[19] M. Raihan, M. M. Islam, P. Ghosh, S.A. Shaj, M. R. Chowdhury, **Saikat Mondal** and A. More, *"A Comprehensive Analysis on Risk Prediction of Acute Coronary Syndrome Using Machine Learning Approaches"*. In Proceeding of the 21st International Conference of Computer and Information Technology (ICCIT 2018), pp. 1-6, IEEE, Dhaka, Bangladesh, December 2018

[20] P. Nag, **Saikat Mondal**, F. Ahmed, A. More and M. Raihan, *"A Simple Acute Myocardial Infarction (Heart Attack) Prediction System Using Clinical Data and Data Mining Techniques"*. In Proceedings of 20th International Conference of Computer and Information Technology (ICCIT 2017), pp. 1-6, IEEE, Dhaka, Bangladesh, December 2017

[21] A.K. Bairagi, **Saikat Mondal** and D. Chakroborti, *"Securing Bangla Text Communication Using Image Steganography with Dynamic Substitution in IoT Environment"*, Khulna University Studies Journal (KUS), pp. 19, 2017.

[22] M. Raihan, **Saikat Mondal**, A. More, M. O. F. Sagor, G. Sikder, M. A. Majumder,

M. A. A. Manjur and K. Ghosh, *"Smartphone Based Ischemic Heart Disease (Heart Attack) Risk Prediction using Clinical Data and Data Mining Approaches, a Prototype Design"*. In Proceedings of the 19th International Conference on Computer and Information Technology (ICCIT 2016), pp. 299-303, IEEE, Dhaka, Bangladesh, December 2016.

[23] **Saikat Mondal**, R. Debnath and B.K. Mondal, *"An Improved Color Image Steganography Technique in Spatial Domain"*. In Proceedings of the 9th International Conference on Electrical and Computer Engineering (ICECE 2016), pp. 582-585, IEEE, Dhaka, Bangladesh, December 2016.

[24] A.K Bairagi, **Saikat Mondal** and R. Debnath, *"A Robust RGB Channel Based Image Steganography Technique using a Secret Key"*. In Proceedings of the 16th International Conference on Computer and Information Technology (ICCIT 2013), pp. 81-87, IEEE, Khulna, Bangladesh, March 2014

[25] A. K. Bairagi, **Saikat Mondal** and A. K. Mondal, *"A Dynamic Approach in Substitution Based Audio Steganography"*. In Proceedings of the International Conference on Informatics, Electronics & Vision (ICIEV 2012), pp. 501-504, IEEE, Dhaka, Bangladesh, May 2012

[26] M.S. Rahman, **Saikat Mondal**, S. K. Ghosh and M. M. Rahman, *"A New Approach of Extendable Multicast Routing Protocol in MANET"*. In Proceedings of the 13th International Conference on Computer and Information Technology (ICCIT 2010), pp. 120-124, IEEE, Dhaka, Bangladesh, December 2010

AWARDS AND ACHIEVEMENTS

[2022] Dr. Keith Geddes Award (Student of the Year): Awarded to *only one* Ph.D. student by the Department of Computer Science, University of Saskatchewan, for outstanding research and academic performance in the ongoing **Ph.D.** program. Award value: $2,500.

[2022] GSA Research Excellence in STEM Award 2022: Awarded to *only one* student from the University of Saskatchewan for the outstanding contribution to Science, Technology, Engineering, and Mathematics (STEM), active research collaborations, popularity in the research community and exceptional leadership skills.

[2022] Citizenship Award 2021: Awarded by the Department of Computer Science in recognition of exceptional leadership skills, exemplary contributions to organizing events on campus, and engaging in voluntary works that have added to the quality and reputation of the department.

[2022] Dr. Keith Geddes Award Nomination: Nominated by the Department of Computer Science, University of Saskatchewan, for outstanding research and academic performance in the ongoing **Ph.D.** program.

[2022] Carl McCrosky Innovation Scholarship Nomination: Nominated by the Department of Computer Science, University of Saskatchewan, for innovative research and academic performance in the ongoing **Ph.D.** program.

[2022] ISEC 2022 Best Paper Award: Awarded by the 15th Innovations in Software Engineering Conference (ISEC 2022) for the paper *"Reproducibility Challenges and Their Impacts on Technical Q&A Websites: The Practitioners' Perspectives"*.

[2021] 2020 University of Saskatchewan Graduate Thesis Award: Awarded to *only one* M.Sc. student by the University of Saskatchewan for the best M.Sc. thesis in the area of Physical and Engineering Science. Award value: $500.

[2021] 2020 Research Excellence Award (Best M.Sc. Thesis Award): Awarded to *only one* M.Sc. student by the Department of Computer Science, University of Saskatchewan, for outstanding research and academic performance in the **M.Sc.** level.

[2021] Vanier Canada Graduate Scholarship: Nominated by the Department of Computer Science, University of Saskatchewan, for exceptional leadership skills and extraordinary research & academic performance.

[2021] People's Choice Award: Awarded by the Computer Science and Bioinformatics Symposium of the University of Saskatchewan for the poster *"The Reproducibility of Programming-Related Issues in Stack Overflow Questions"*.

[2020] Dr. Keith Geddes Award (Student of the Year): Awarded to *only one* M.Sc. student by the Department of Computer Science, University of Saskatchewan, for outstanding research and academic performance in the ongoing **M.Sc.** program. Award value: $2,500.

[2020] Dean's Scholarship: Nominated by the Department of Computer Science, University of Saskatchewan, for outstanding research and academic performance.

[2019] Dr. Keith Geddes Award Nomination: Nominated by the Department of Computer Science, University of Saskatchewan, for outstanding research and academic performance in the ongoing **M.Sc.** program.

[2023] Graduate Travel Award: Awarded by the University of Saskatchewan for ICSE 2023 travel to Melbourne, Australia. Award value: $550.

[2019] Graduate Travel Award: Awarded by the University of Saskatchewan for MSR 2019 travel to Montreal, Canada. Award value: $350.

[2015] Best Faculty Award: In recognition of outstanding contributions and dedication to academic achievement in Computer Science and Engineering Discipline, School of Science, Engineering and Technology, Khulna University, Bangladesh.

[2014] Outstanding Service Award: Awarded by the 16th International Conference on Computer and Information Technology (ICCIT 2013), Bangladesh, to recognize my outstanding contributions and dedication for successfully organizing the renowned conference on Information Technology (IT).

[2012] Icon of the Month Award (Best Employee): Awarded by Samsung R&D Institute Bangladesh to recognize the outstanding contribution in research and development projects towards the progress of the company.

[2012] Exceptional Engineer Award: Awarded by Samsung R&D Institute Bangladesh to recognize the excellent community contribution on behalf of the company.

[2001] Best Student Award: Awarded by the Member of Parliament (MP), Khulna-1, Bangladesh, for obtaining the highest marks among around 5K students who attended the Secondary School Certificate (SSC) exam from Khulna-1 in 2000.

[2006] Math Olympiad Award: Awarded by Khulna University, Bangladesh, for being a *champion* in the Math Olympiad.

[2008] Programming Contest Award: Awarded by Khulna University, Bangladesh, for being the *first runner-up* in the programming contest.

[2000] Champion and Best Speaker Awards: Our debate group became a champion,

and I was awarded as the best speaker in the inter-school debate competition organized by Rupantar, Batiaghata, Khulna, Bangladesh.

[1990–2002] Cultural Awards: I won a number of awards for being top in cultural competitions (e.g., debate, poetry recitation, speech, and acting).

RESEARCH

I have been investigating several crucial quality aspects of online programming Q&A websites such as Stack Overflow. These websites curate invaluable programming knowledge or practices and disseminate them among millions of software developers every day. In essence, these online resources have the potential to save millions of dollars in software debugging and technical troubleshooting every year. Considering the immense importance of the quality of the vast knowledge base, I have been developing intelligent tools and techniques to support (a) these programming Q&A websites to manage their content better and (b) the users to search for relevant, high-quality content effectively. My research not only focuses on the technical aspects but also on various community aspects (e.g., voting, communications) to ensure a high-quality programming knowledge base that promotes equity, diversity, inclusion, and accessibility. Thus, my research has the potential to significantly improve a global programming knowledge base such as the Stack Overflow Q&A website, which has been and will play a major role in modern software development.

I introduced a few novel quality metrics (e.g., reproducibility, consistency) in online programming Q&A websites such as Stack Overflow. In addition, I utilize static code analysis, explainable Machine Learning, feature engineering, text processing, code readability/understandability metrics, Natural Language Processing (NLP), data analytics, and statistical analysis in my research.

Selected Ph.D. Research Projects

I have been working on the following research projects as a part of my Ph.D. courses and research works. Papers produced from these projects have been accepted/published/submitted at the highly selective peer-reviewed conferences of Software Engineering such as **ICSE, ICSME, MSR, ASE** and at the top-ranked journals such as **EMSE, TOSEM, JSS**.

[1] **[2020-2022] EditEx:** This study attempts to introduce tool supports to identify rejected edits with the potential reasons automatically. *Technology & Concepts:* Empirical study, qualitative analysis, user study, natural language processing, Machine Learning (ML) and rule-based classifier, cognitive workload using NASA TLX. (Phase-I was accepted and published in **ICSME 2020** RR track and Phase-II was accepted and published in **EMSE**). `EditEx` installation tutorial can be found on a YouTube video

[2] **[2021-2022] iEdit:** This study enhances *Rollback Edit Inconsistencies Detector* and investigates inconsistencies in rejected edits. It introduced an online tool, `iEdit` (Inconsistent Edit), to detect inconsistent edits automatically. It works with the Stack Overflow edit system and guides editors with valuable suggestions on inconsistent content with their rejection ratio. *Technology & Concepts:* Empirical

study, qualitative and quantitative analysis, Machine Learning models, rule-based detection, client-server technology. (Under Major Revision in ACM Transactions on Software Engineering and Methodology (**TOSEM**) journal)

[3] **[2022-2023] Identification of Questions that Need Code Snippets:** Stack Overflow questions often discuss programming-related problems that require example code snippets to understand and resolve the problems. However, users often miss including code snippets with questions (whenever required) during their submission, which prevents them from receiving appropriate solutions. Thus, this study attempts to identify the questions that need code snippets to answer appropriately. It plans to introduce tool support that recommends users include required code snippets by analyzing the question texts. *Technology & Concepts:* Empirical study, qualitative and quantitative analysis, discourse analysis, concept mining, Machine Learning models. (To be submitted in **ICSE 2024**)

[4] **[2022-2023] Answer Finder for Unanswered Questions:** In Stack Overflow, about 30% of 22 million questions did not receive any answers. However, our preliminary investigation found that an internet-scale advanced search based on syntax & semantic similarity of the text & code of the questions could find relevant/partially relevant solutions to the problem reported in the questions. This study thus aims to introduce a tool to support developers in finding solutions even when the Stack Overflow questions do not receive answers. *Technology & Concepts:* Context-aware web search, syntax & semantic similarity of code & text, meta-search, context-relevance, qualitative analysis, user study, ground truth. (**SANER 2024** - under review)

[5] **[2023-] Support OSS Projects By Identifying Erroneous/Buggy/Low-Quality Code Snippets:** Developers often include example code snippets with Stack Overflow questions to explain their programming problems. For example, they can include - (1) an inefficient code snippet and ask for a better code, (2) an erroneous code snippet and ask how to resolve the error, and (3) a sample code snippet to explain a problem clearly. However, similar inefficient or erroneous code can be composed by other developers. Such code degrades software quality, increases vulnerability, and raises maintenance costs. This project attempts to mine the inefficient or buggy code snippets from the Stack Overflow questions. In particular, this study plans to develop machine learning classifiers based on text-based features to identify the questions that contain inefficient/buggy code snippets. This project then looks at these code snippets in Open-Source Software (OSS) projects. This project will employ code clone detection tools (e.g., CCFinder, NiCad) to find similar code snippets in the OSS projects. The primary hypothesis is that the quality of any OSS project containing more inefficient/buggy code clones is low. However, this study will suggest developers better/bug-free code snippets from Stack Overflow answers. *Technology & Concepts:* Empirical study, qualitative and quantitative analysis, clone detection tool, Machine Learning models. (On going study)

[6] **[2021] Issue Reproducer (✢):** It is an extended version of our earlier work published in **MSR 2019**. (accepted in **EMSE**)

[7] **[2021] Rollback Edit Inconsistencies Detector:** This study enhances an

M.Sc. research project. It identifies eight rollback edit inconsistencies and introduces algorithms to detect such inconsistencies automatically. *Technology & Concepts:* Empirical study, qualitative and quantitative analysis, user study, rule-based detection. (one full paper accepted in **MSR 2021**)

[8] **[2020-2021] Practitioners' Perspectives on Issue Reproducibility Challenges:** Our previous study (MSR 2019) produced a catalogue of potential challenges that hinder the reproducibility of issues reported at Stack Overflow questions. This study attempts to understand developers' perspectives (e.g., agreement, impact) on those challenges by surveying 53 users of Stack Overflow. *Technology & Concepts:* User study, cognitive workload using NASA TLX, Likert scale, open/-close coding. (one full paper with *best paper award* in **ISEC 2022**, received special issue invitation from Journal of Systems and Software **(JSS)**, submitted and now under review)

[9] **[2020-2022] Technology Usage Stability Miner:** This study attempts to find the technology usage stability by analyzing the questions answering traces of 21K users of Stack Overflow submitted over eleven years. *Technology & Concepts:* Empirical study, software repository mining, visualization. (to be submitted in a suitable venue soon)

[10] **[2021-2022] ReproStrength:** This study investigates the Strength of Reproducibility in Machine Learning Models to Predict Unanswered/Unresolved Questions of Stack Overflow. *Technology & Concepts:* Feature extraction & analysis, Machine Learning models, SHAP explainability, quality metrics. (to be submitted in a suitable venue soon)

Selected M.Sc. Research Projects

I completed the following research projects during my Master in Computer Science at the University of Saskatchewan:

[11] **[2018] Issue-Reproducer:** This study investigates – (1) whether the issues reported in Stack Overflow questions could be reproduced or not, and (2) the correlation between issue producibility status (reproducible/irreproducible) and quality of questions. (one full paper at **MSR 2019**)

[12] **[2019] Unanswered Question Predictor:** This study predicts the potentially unanswered questions in advance during their submission. It offers guidance to question submitters to improve the question so that they receive the appropriate answers in time. (one full paper at **ISEC 2021**)

[13] **[2019] Rollback Edit Reasons and Inconsistencies Detector:** This study investigates the reasons behind rollback edits and how the reasons could be detected automatically. Besides, it expose the inconsistencies of rollback edits and their detection technique. (one full paper at **MSR 2021**, one paper at **ICSME 2020** RR track, one article is under review in **EMSE**)

[14] **[2018-2023] Agreement between Subjectivity and Objectivity:** This study investigates whether the subjective evaluation mechanism of Stack Overflow

agrees with the objective measures. (Accepted in **MSR 2023**)

[15] **[2018] Source Code Classification:** This study attempts to classify source codes based on their quality. It extracts a few attributes (e.g., API misuse, code smells) using static code analysis and develops Machine Learning models to classify low-quality code.

Global Outreach & Research Collaborations

I collaborated with leading researchers from several internationally reputed universities and one institution for several research projects. I led each collaborative project by brainstorming the core ideas, conducting the experiments, and writing the papers. The collaborators helped refine my ideas with professional insights and helped improve the papers with high-quality feedback. My collaborators are as follows:

[2018–] Masud Rahman, Dalhousie University, Canada: We collaborated on *Issue Reproducer* project that produced one full paper at **MSR 2019**, one journal in **EMSE** journal. Now, we are working on the *Identification of Questions that Need Code Snippets* project targeting to submit in **ASE** 2023.

[2019–] Gias Uddin, University of Calgary, Canada: We collaborated on *Rollback Edit Reasons and Inconsistencies Detector* project that produced multiple papers - one full paper at **MSR 2021**, one paper at **ICSME 2020** RR track, one article in **EMSE** journal, and one article is under major revision in **TOSEM** journal.

[2022-] Subroto Nag Pinku, University of Saskatchewan, Canada: We collaborated on *An Empirical Study on Python Version Migration Challenges Reported at Stack Overflow Questions* project - one full paper was submitted in SCAM 2023, which is under review.

[2021-] Shohel Ahmed, Islamic University of Technology, Bangladesh: We collaborated on *Readability Challenges of Stack Overflow Code Snippets* project - one full paper is being prepared to submit in a suitable venue.

[2023-] Manishankar Mondal, Khulna University, Bangladesh: We collaborated on *Supporting Quality of Open Source Software Projects Leveraging Crowd Knowledge* project - one full paper is being prepared to submit in a suitable venue.

[2015–2018] Arun More, Rural Health Progress Trust, Latur, India: We collaborated on multiple projects when I was a faculty member at Khulna University that produced multiple papers.

LEADERSHIP & COMMUNITY SERVICES

I served academic, community, and professional organizations and gained experience in **leadership, interpersonal communications, and in executing organizational goals**. To date, I served in the following leadership positions:

[1] **[2022] Lead Organizer**, 6th Symposium on Innovations in Computer Science and Applied Computing (ICSAC) (Research Fest 2022), Computer Science Graduate Council (CSGC), Department of Computer Science, University of Saskatchewan, Canada.

[2] **[2021–2022] President**, Computer Science Graduate Council (CSGC), Department of Computer Science, University of Saskatchewan, Canada.

[3] **[2020–2021] GSA Representative**, Computer Science Graduate Council (CSGC), Department of Computer Science, University of Saskatchewan, Canada.

[4] **[2020–2021] Webmaster**, IEEE Canada North Saskatchewan Chapter.

[5] **[2019–current] Social Chair**, Software Research Lab, Department of Computer Science, University of Saskatchewan, Canada.

[6] **[2021] Program Convener**, Pahela Baishakh & Eid Adda, Khulna University Alumni Association, Canada.

[7] **[2021–current] Executive Member (elected)**, Khulna University Alumni Association, Canada.

[8] **[2021] Member of Technical Support Team**, SSPP Fund Raising Banquet, Saskatoon, Canada.

[9] **[2019–2020] Vice President Social**, Computer Science Graduate Council (CSGC), Department of Computer Science, University of Saskatchewan, Canada.

[10] **[2012–2016] Assistant Director of Students' Affairs**, Khulna University, Bangladesh.

[11] **[2012–2018] Founder and Director**, Suresh Sreety Shikkha Niketon (An honorary full-free school for the poor children), Batiaghata, Khulna, Bangladesh.

[12] **[2012–2018] Advisor**, Club for Updated Search on Computer (CLUSTER), Khulna University, Bangladesh.

[13] **[2012–2018] Advisor**, Seminar Library, Department of Computer Science, Khulna University, Bangladesh.

[14] **[2014–2018] Mentor**, Bangladesh Association of Software and Information Services (BASIS), Khulna University Chapter.

[15] **[2015–current] Chief Advisor**, Tech For Mankind Bangladesh.

[16] **[2015–2018] Coordinator**, Google Developers Group-GDG Bangla, Khulna University Chapter, Bangladesh.

[17] **[2014–2015] Executive Member (elected)**, Khulna University Teachers' Association, Khulna University, Bangladesh.

[18] **[2012–2015] Program Admin**, Microsoft Developer Network (MSDN) Academic Alliance, Department of Computer Science, Khulna University, Bangladesh.

[19] **[2010–2012] Program Coordinator & Volunteer**, Computers Are Free For Everyone (CAFFE), Dhaka, Bangladesh.

[20] **[2013–2014] Web Admin**, 16th International Conference on Computer and Information Technology-2013 (ICCIT-13), Bangladesh.

[21] **[2013–2014] Web Admin**, Khulna University Web Site, Khulna University, Bangladesh.

[22] **[2012–2018] Programming Contest Coordinator and Coach**, Department of Computer Science, Khulna University, Bangladesh.

[23] **[2012–2015] Sports Coordinator**, Department of Computer Science, Khulna University, Bangladesh.

[24] **[2012–2018] [Principal Coordinator]**, Science and Information Technology Club (SAiTEC), Secondary and Higher Secondary Schools, Batiaghata, Khulna, Bangladesh.

[25] **[2012–2018] Member**, Volunteers of Bangladesh & Poriborton Chai Bangladesh.

Research Talks/Posters/Demonstrations

I attended conferences (physically & virtually) and workshops over the last ten years and delivered dozens of research talks on my research topics. Such attendance and talks allowed me (1) to collaborate with the leading researchers from my area, (2) to better communicate my ideas with a large audience, and (3) to stay up-to-date with the hot research trends. The following research talks were produced from my works:
[1] **Saikat Mondal**, G. Uddin, and C. K. Roy, *"Automatic Prediction of Rejected Edits in Stack Overflow"*. **ICSE 2023** Journal-First Track, Melbourne, Australia, May 2023.

[2] **Saikat Mondal**, M. M. Rahman and C. K. Roy, *"Do Subjectivity and Objectivity Always Agree? A Case Study with Stack Overflow Questions"*. **MSR 2023**, Melbourne, Australia, May 2023.
[3] **Saikat Mondal**, and B. Roy. 2022. *"Reproducibility Challenges and Their Impacts on Technical Q&A Websites: The Practitioners' Perspective"*. ISEC, DA-IICT Gandhinagar, India.
[4] **Saikat Mondal**, G. Uddin and C. K. Roy. 2021 *"Rollback Edit Inconsistencies in Developer Forum"*. MSR, Madrid, Spain.

[5] **Saikat Mondal**, M. M. Rahman, C. K. Roy, and K. Schneider. 2021. *"The Reproducibility of Programming-Related Issues in Stack Overflow Questions"*. University of Saskatchewan, Canada.

[6] **Saikat Mondal**, C M K. Saifullah, A. Bhattacharjee, M. M. Rahman, and C. K. Roy. 2021. *"Early Detection and Guidelines to Improve Unanswered Questions*

on Stack Overflow". ISEC, India

[7] **Saikat Mondal**, G. Uddin and C. K. Roy. 2020. *"Automatic Identification of Rollback Edit with Reasons in Stack Overflow Q&A Site"*. ICSME, Adelaide, Australia

[8] **S. Mondal**, M. M. Rahman and C. K. Roy. 2019 *"Can Issues Reported at Stack Overflow Questions be Reproduced? An Exploratory Study"*. MSR, Montreal, Canada

[9] M. Raihan, **Saikat Mondal**, A. More, M. O. F. Sagor, G. Sikder, M. A. Majumder, M. A. A. Manjur and K. Ghosh. 2016. *"Smartphone Based Ischemic Heart Disease (Heart Attack) Risk Prediction using Clinical Data and Data Mining Approaches, a Prototype Design"*. ICCIT, Bangladesh

[10] **Saikat Mondal**, R. Debnath and B.K. Mondal. 2016. *"An Improved Color Image Steganography Technique in Spatial Domain"*. ICECE, Bangladesh

[11] **Saikat Mondal**, R. Debnath and B.K. Mondal. 2016. *"An Improved Color Image Steganography Technique in Spatial Domain"*. ICECE, Bangladesh

[12] **Saikat Mondal**. 2015. *"Innovations for Service"*. **Invited Talk**, Divisional ICT Fair, Ministry of ICT, Bangladesh

[13] A.K Bairagi, **Saikat Mondal** and R. Debnath. 2014. *"A Robust RGB Channel Based Image Steganography Technique using a Secret Key"*. ICCIT, Bangladesh

[14] **Saikat Mondal**. 2014. *"PHP for Software Development"*. **Invited Talk**, Google Developers Group (GDG) Bangla, Khulna University Chapter, Bangladesh

[15] M.S. Rahman, **Saikat Mondal**, S. K. Ghosh and M. M. Rahman. 2010. *"A New Approach of Extendable Multicast Routing Protocol in MANET"*. ICCIT, Bangladesh

Research Tools & Technology Experience

[1] **Software Development & Maintenance:** Eclipse, Jupyter Notebook, NetBeans, PyCharm, Code::Blocks, IntelliJ, Visual Studio, JUnit, JavaParser, Jsoup, PMD, FindBugs, Roslyn, Esprima and Maven.

[2] **Software Version Control:** Git, GitHub.

[3] **Machine Learning & Data Mining:** WEKA, R, MATLAB, Decision Trees (CART), Random Forest, XGBoost, ANN, KNN, SVM, Logistic Regression, Naive Bayes, Linear Regression, Re-sampling, SMOTE, Bagging, Boosting, SHAP, LIME, and Ensemble Learning.

[4] **Code Search & Information Retrieval:** Lucene.

[5] **Natural Language Processing:** Stanford CoreNLP, Mallet, ROUGE, POS tagging, Sentiment analysis, Analysis/SentiStrength SE, SEntiMoji, Term weighting, Text summarization, Discourse Analysis, and Semantic similarity analysis.

[6] **Source Code Analysis:** AST, Syntax similarity, Readability, Understandability, and Complexity analysis.

[7] **Statistics & Data Modeling:** Probability distributions, Random sampling, Confidence interval, Central tendency, Data centrality, and Statistical significance tests.

[8] **Reporting & Prototyping:** LaTeX, Adobe Photoshop, MS Office, and Pencil.

[9] **Programming Languages:** Java, Python and C/C++.

[10] **Research Collaboration:** Overleaf, Slack, MS team, WhatsApp.

[11] **Data Visualization:** Gephi, OGDF.

Professional Projects

Conducted several research-based projects while working in Samsung R&D Institute Bangladesh and won the Icon of the Month award. I also completed several research and development projects while I was a faculty in Khulna University, Bangladesh.

• **Protein Fold Classification Using Machine Learning Technique**, Research Cell, Khulna University, Bangladesh

• **IPC Mailbox System for VxWorks**, Connectivity Division, Samsung R&D Institute Bangladesh

• **DSP Software Development for Camera and Channel – Phase I and II**, Samsung Reconfigurable Processor Division, Samsung R&D Institute Bangladesh

• **Spyder Wi-Fi Display**, Connectivity Division, Samsung Bangladesh R&D Center Ltd

• **Home Entertainment WLAN SOC Host Software Development**, Connectivity Division, Samsung R&D Institute Bangladesh

• **Khulna University (www.ku.ac.bd) and ICCIT 2013 (www.iccit.org.bd/2013) Website (Design and Development)**, Khulna University, Bangladesh

Reviewer/Sub-Reviewer

Serving as a reviewer/sub-reviewer of several top-tier conferences/journals of Software Engineering.

• **Junior Program Committee Member**: International Working Conference on Mining Software Repositories (MSR 2024)

• Empirical Software Engineering (EMSE)
• Transactions on Software Engineering and Methodology (TOSEM)
• Information and Software Technology (IST)

• International Conference on Software Engineering (ICSE)

• International Conference on Automated Software Engineering (ASE)

• International Conference on Software Maintenance and Evolution (ICSME)

• International Conference on Software Analysis, Evolution, and Reengineering (SANER)

• International Working Conference on Mining Software Repositories (MSR)

• International Working Conference on Source Code Analysis and Manipulation (SCAM)

• International Conference on Program Comprehension (ICPC)

• Innovations in Software Engineering Conference (ISEC)

• International Conference on Advances in Science, Engineering and Robotics Technology (ICASERT)

• International Conference on Computer Science and Software Engineering (CASCON)

GRANTS & SCHOLARSHIPS

[2023-2024] Faculty Scholarship & Graduate Teaching Fellowship: Awarded by the Department of Computer Science, the University of Saskatchewan, for the Ph.D. program. Scholarship amount: $24,500/year for 1 year.

[2022-2023] Faculty Scholarship & Graduate Teaching Fellowship: Awarded by the Department of Computer Science, the University of Saskatchewan, for the Ph.D. program. Scholarship amount: $24,500/year for 1 year.

[2021-2022] Faculty Scholarship & Graduate Teaching Fellowship: Awarded by the Department of Computer Science, the University of Saskatchewan, for the Ph.D. program. Scholarship amount: $24,500/year for 1 year.

[2021] GSA Bursary: Awarded by the Graduate Students' Association (GSA), University of Saskatchewan, for financial need, good community involvement, and strong academic performance. Scholarship amount: $750.

[2021] Faculty Scholarship: Awarded by the Department of Computer Science, University of Saskatchewan for the research excellence in the ongoing Ph.D. program as top ups. Scholarship amount: ≈ $2,500.

[2020-2021] Faculty Scholarship & Graduate Teaching Fellowship: Awarded by the Department of Computer Science, the University of Saskatchewan, for the Ph.D. program. Scholarship amount: $24,500/year for 1 year.

[2020] Faculty Scholarship & Graduate Teaching Fellowship: Awarded by the Department of Computer Science, University of Saskatchewan for the Ph.D. program. Scholarship amount: $1,333/month for 4 months.

[2019-2020] Faculty Scholarship: Awarded by the Department of Computer Science, University of Saskatchewan, for research excellence in the ongoing M.Sc. program as top-ups. Scholarship amount: ≈ $8,000.

[2019] GSA Bursary: Awarded by the Graduate Students' Association (GSA), University of Saskatchewan, for financial need, good community involvement, and strong academic performance. Scholarship amount: $1,000.

[2018-2020] Faculty Scholarship & Graduate Teaching Fellowship: Awarded by the Department of Computer Science, the University of Saskatchewan, for the M.Sc. program. Scholarship amount: $20,000/year for 2 years.

[2018] Khulna University Research Grant: Awarded by Khulna University Research Cell, Bangladesh, for research excellence when I was an assistant professor of Khulna University. Grant amount: ≈ $1,000.

[2005–2010] Merit List Scholarship: Awarded by Khulna University, Bangladesh, from 2005 to 2010 for academic excellence in the B.Sc. program.

[2000–2002] Merit List Scholarship: Awarded by Government Education Board (Jessore) from 2000 to 2002 for excellence in the 2000 SSC exam.

EMPLOYMENT HISTORY

Graduate Teaching Assistant
September 2018–Current University of Saskatchewan, Canada

I was appointed as a graduate research & teaching assistant in the Department of Computer Science in 2018. I am accounted for graduate research & development, guiding & evaluating students' course projects and marking undergraduate courses.

Research Advisor
February 2023–Current DreamOnline Limited, Bangladesh

I was appointed as a Research Advisor in DreamOnline Limited, Bangladesh, in 2023. My sole responsibility is to work with the company's AI team and guide them to develop automated tools and techniques that support developers in producing high-quality software.

Assistant Professor
July 2015–Current Khulna University, Bangladesh

Appointed as a lecturer and later promoted as an Assistant Professor in the Department of Computer Science and Engineering, Khulna University. I was accounted for (1) teaching undergraduate classes, curricular innovation, course planning, course evaluation, conducting exams and publishing grades, (2) conducting research, supervising undergrad theses, (3) conducting academic projects, organizing student contests, organizing project festivals, leading students in the regional/national level contests, (4) managing department's computer club, library, website and (5) conducting administrative affairs such as admission test management, departmental purchase inspection, and various other official decision makings.

Assistant Director of Students' Affairs
December 2012–April 2016 Khulna University, Bangladesh

I was appointed as an Assistant Director of Students' Affairs (in addition to a faculty mem-

ber) at Khulna University. I was accounted for (1) students' welfare of the university, (2) organizing cultural events and festivals, (3) celebrating national days, (4) advising cultural organizations of the university, and (5) promoting law and order of the university.

Lecturer
May 2012–July 2015 Khulna University, Bangladesh

Appointed as a full-time faculty member in the Department of Computer Science and Engineering, Khulna University. I was accounted for (1) teaching undergraduate classes, curricular innovation, course planning, course evaluation, conducting exams and publishing grades, (2) conducting research, (3) conducting academic projects, organizing student contests, organizing project festivals, leading students in the regional/national level contests, (4) managing department's computer club, library, website and (5) conducting administrative affairs such as admission test management, departmental purchase inspection, and various other official decision makings.

Software Engineer
November 2010–May 2012 Solution Lab, Samsung R&D Institute Bangladesh Ltd.

I was appointed as a software engineer and got the opportunity to work under the advanced R&D division (solution lab) due to my outstanding research and development skills. I was accounted for (1) solving research problems, developing software (application & system) and reporting project updates, (2) exposing novel research ideas on wireless connectivity and writing research proposals.

Research Assistant
August 2015–May 2018 Rural Health Progress Trust, Maharashtra, India

I was accounted for (1) conducting research on detecting heart diseases by analyzing real-world data, (2) collecting data from online applications & heart camping and processing them, and (3) supervising the research team.

TEACHING EXPERIENCE

Over the last nine years, I taught several courses and evaluated exams in three different universities in various capacities.

Khulna University

I taught several undergraduate-level courses at Khulna University from 2012 to 2018. I was accounted for course syllabus design, teaching classes, designing questionnaires, conducting exams, evaluating exams, and then publishing the grades. Besides regular classes, I also supervised the software development projects and thesis undertaken by the students.

- Software Development Project (CSE 2200)
- Artificial Intelligence (CSE 4205)
- Structured Programming (CSE 1103)
- Compiler Design (CSE 4105)

- Algorithms (CSE 2201)
- Object Oriented Programming (CSE 1201)
- Pattern Recognition (CSE 4221)
- Web Programming Project (CSE 3200)

The detailed syllabus of these courses can be found at the **website** of Khulna University.

North Western University

I taught several undergraduate-level courses at North Western University from 2012 to 2018 as a part-time faculty. I was accounted for teaching classes, designing questionnaires, conducting exams, evaluating exams, and then publishing the grades. Besides regular classes, I also supervised the software development projects undertaken by the students.

- Software Development Project/Sessional
- Computer Graphics and Pattern Recognition (CSE 4301)
- Computer Graphics and Pattern Recognition Lab (CSE 4302)
- Compiler Design (CSE 3207)
- Compiler Design Lab (CSE 3208)

University of Saskatchewan

In Winter 2022 semester, I guided and evaluated students' software engineering projects of **CMPT 370: Intermediate Software Engineering.** Previously, I assessed the assignments of several undergraduate-level courses at the University of Saskatchewan from 2018 to 2023 as follows:

- CMPT 141: Introduction to Computer Science
- CMPT 214: Programming Principles and Practice
- CMPT 280: Intermediate Data Structures and Algorithms

The detailed syllabus of these courses can be found at **University of Saskatchewan website**.

ACADEMIC EXCELLENCE

I was always committed to academic excellence throughout my academic career, as shown below.

Ph.D. Courses

I took two courses during my Ph.D. in Computer Science at the University of Saskatchewan and scored an average of **93.50%**. These courses involved multi-

ple assignments, paper reviews, presentations, a term project, term final exam and a term paper. The papers of my term projects are ready to submit at the upcoming conference.

• CMPT 898: Human-Driven Software Engineering for Scientific Research (94%)

• CMPT 824: Graph Drawing and Network Visualization (93%)

M.Sc. Courses

I took four during my Masters and Ph.D. in Computer Science at the University of Saskatchewan and scored an average of **92%**. These courses involved multiple assignments, paper reviews, presentations, a term project, and a term paper. Several of my term projects produced publications later and thus were included in my thesis due to their high quality.

• CMPT 846: Software Maintenance & Evolution (93%)

• CMPT 816: Advanced Software Engineering (93%)

• CMPT 856 Topics in Software Engineering (93%)

• CMPT 820: Topics in Learning and Intelligent Systems (89%)

The detailed syllabus of these courses can be found at the **website** of University of Saskatchewan.

Undergraduate-Level Courses

A total of **160** credits were completed during the four years of my Bachelor of Computer Science and Engineering at Khulna University. In my class, I scored the highest CGPA among 35 students.

TRAINING

I conducted the following training on research, teaching, mental health well-being and software engineering:

• **Mental Health First Aid**, University o Saskatchewan (supported by the Mental Health Commission of Canada), Canada.

• **Teaching Pedagogy (Induction, Module I and II)**, Center of Excellence in Teaching and Learning and Institutional Quality Assurance Cell, Khulna University, Bangladesh.

• **Teaching Methodology**, Research Cell, Khulna University, Bangladesh.

• **Research Methodology**, Higher Education Quality Enhancement Project, Economics Discipline, Khulna University, Bangladesh.

• **Child Rights**, Save the Children, Bangladesh.

• **Mobile Application Development**, Ministry of Information & Communication Technology (MoICT), Bangladesh.

• **Process Engineering**, Samsung R&D Institute Bangladesh.

PROFESSIONAL REFERENCES

(1) Dr. Chanchal K. Roy

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(3) Dr. Masud Rahman

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