

Keheliya Gallaba

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SUMMARY

- Experienced in building developer tools at **Microsoft Research, Fortinet, & Huawei** in **Java, JS, Python**.
- Published in top-tier (**CORE Rank: A* & A**) Software Engineering research journals & conferences (**ICSE, TSE, FSE, ASE**) in the areas of CI/CD, programming languages, tools, and processes.
- Research interests: Mining large-scale data sources in software engineering (i.e., **GitHub, StackOverflow, CircleCI & TravisCI**) to improve software engineering processes and tools.
- Successful collaborations with distributed research teams in **Canada, Austria, and USA**.

EDUCATION

McGill University, Montréal, QC, Canada

Ph.D. in Software Engineering Sep 2016 – Sep 2021
Thesis: Improving the Robustness and Efficiency of Continuous Integration and Continuous Deployment
Adviser: Prof. Shane McIntosh
Publications: MSR17a, MSR17b, MSR18a, MSR18b, TSE18, ASE18, MSR19, ICSME19, TSE20, ICSE22.

University of British Columbia, Vancouver, BC, Canada

M.A.Sc. in Software Engineering Jan 2014 – Dec 2015
Thesis: Characterizing and refactoring asynchronous JavaScript callbacks
Advisers: Prof. Ali Mesbah and Prof. Ivan Beschastnikh
Publications: ESEM15, ICSME17.

University of Moratuwa, Moratuwa, Sri Lanka

B.Sc. (Hons.) in Computer Science and Engineering May 2007 – Nov 2011
Thesis: An analysis of BPMN 2.0 as a business process execution language
Advisers: Vishaka Nanayakkara and Dr Milinda Pathirage
Publications: CeBPM12.

RESEARCH EXPERIENCE

Huawei Centre for Software Excellence, Toronto, ON, Canada

Senior Engineer | Researcher, AI Engineering Group Jun 2021 – Present
Conducting research and building tools for Foundation Model application development.

YourBase Inc., Redmond, WA, USA

Visiting Researcher Jun 2019 – Jul 2020
Supervisors: Yves Junqueira and John Ewart
Focus: Accelerating continuous integration by caching environments and inferring dependencies.

Microsoft Research, Cambridge, UK

PhD Research Intern, Systems and Networking Group Jun 2018 – Sep 2018
Supervisors: Dr Katja Kevic and Dr Brendan Murphy
Focus: Automatic removal of feature gates in source code.

INDUSTRIAL EXPERIENCE

Wise Systems Inc., Montréal, QC, Canada

Senior Software Engineer Aug 2020 – Apr 2021
Wise Systems provides AI-driven dispatch and routing software that enables the perfect delivery experience, improving fleet efficiency and customer service through machine learning and real-time data.

Fortinet Inc., Vancouver, BC, Canada

Software Development Engineer II, Forticlient Team Feb 2016 – Aug 2016
Worked on the system for generating software vulnerability signatures, validating them, and delivering them to endpoint security software (Forticlient).

WSO2 Inc., Colombo, Sri Lanka

Senior Software Engineer, Integration Technologies Team Apr 2013 – Nov 2013
Development and support of open source middleware solutions for enterprise integration problems.
PoC development, deployment, and on-site support for clients in US, Switzerland, Sweden, and New Zealand.

Software Engineer, Integration Technologies Team Dec 2011 – Mar 2013
Worked with WSO2 Business Process Server, Enterprise Service Bus, Identity Server & Governance Registry.
Experience with WS-BPEL & other WS-* standards, SOAP/REST web services.
XPath, XSLT, Apache ODE and Eclipse plug-in development.

AWARDS & RECOGNITION

Mitacs Accelerate International Award and Graduate Mobility Award	May 2019
Funding to study and conduct research abroad as part of the McGill degree program.	
FRQNT Doctoral Research Award (Bourses de doctorat en recherche)	May 2018
Ranked #1 in the ICT group and obtained the competitive scholarship provided by Fonds de recherche du Québec – Nature et technologies (FRQNT).	
McGill Engineering Doctoral Award (MEDA)	2016 – 2019
Full scholarship with stipend for PhD studies at McGill University.	
Best Full Paper Award	Oct 2015
Awarded at The ACM/IEEE International Symposium on Empirical Software Engineering and Measurement.	
ISERN Student Travel Grant	Oct 2015
Awarded by The International Software Engineering Research Network (ISERN) to attend ESEM '15.	
Manthan Award South Asia for e-Localization	Dec 2010
For creating tools that allowed viewing non-unicode Sinhala language content on Unicode-enabled computers.	
e-Swabhimani 2010 award for e-Localization	Nov 2010
Awarded at the National Best e-Content Awards, Sri Lanka.	

PUBLICATIONS

FULL PAPERS IN INTERNATIONAL JOURNALS (CORE RANK: A*)

- [TSE20] K. Gallaba, Y. Junqueira, J. Ewart, and S. McIntosh, "Accelerating Continuous Integration by Caching Environments and Inferring Dependencies," *IEEE Transactions on Software Engineering*, To appear, 2020. [[📄](#) [PDF](#)]
- [TSE18] K. Gallaba and S. McIntosh, "Use and Misuse of Continuous Integration Features: An Empirical Study of Projects that (mis)use Travis CI," *IEEE Transactions on Software Engineering*, 46(1): pp. 33–50, 2018. [[📄](#) [PDF](#)]

FULL PAPERS IN INTERNATIONAL CONFERENCES (CORE RANK: A* & A)

- [ASE24] M. Yin, Y. Kashiwa, K. Gallaba, M. Alfadel, Y. Kamei, and S. McIntosh, "Developer-Applied Accelerations in Continuous Integration: A Detection Approach and Catalog of Patterns", In *Proceedings of the International Conference on Automated Software Engineering (ASE)*, To Appear, Oct 2024. [[📄](#) [PDF](#)]
- [FSE24] A. E. Hassan, D. Lin, G. K. Rajbahadur, K. Gallaba, F. R. Cogo, B. Chen, H. Zhang, K. Thangarajah, G. A. Oliva, J. Lin, W. M. Abdullah, Z. M. Jiang, "Rethinking Software Engineering in the Foundation Model Era", In *Companion Proceedings of the International Conference on the Foundations of Software Engineering (FSE)*, 294–305, Jul 2024. [[📄](#) [PDF](#)]
- [ICSE22] K. Gallaba, M. Lamothe, and S. McIntosh, "Lessons from Eight Years of Operational Data from a Continuous Integration Service: A Case Study of CircleCI", In *Proceedings of the International Conference on Software Engineering (ICSE)*, 1330–1342, May 2022. 🏆 **Nominated for ACM SIGSOFT Distinguished Paper Award** [[📄](#) [PDF](#)]
- [ASE18] K. Gallaba, C. Macho, M. Pinzger, and S. McIntosh, "Noise and Heterogeneity in Historical Build Data: An Empirical Study of Travis CI", In *Proceedings of the International Conference on Automated Software Engineering (ASE)*, 87–97, Sep 2018. [[📄](#) [PDF](#)]
- [ICSME17] K. Gallaba, Q. Hanam, A. Mesbah, and I. Beschastnikh, "Refactoring Asynchrony in JavaScript", In *Proceedings of the International Conference on Software Maintenance and Evolution (ICSME)*, 353–363, Sep 2017. [[📄](#) [PDF](#)]
- [ESEM15] K. Gallaba, A. Mesbah, and I. Beschastnikh, "Don't Call Us, We'll Call You: Characterizing Callbacks in JavaScript", In *Proceedings of the International Symposium on Empirical Software Engineering and Measurement (ESEM)*, pp. 247–256, Oct 2015. 🏆 **Best Paper Award** [[📄](#) [PDF](#)]

SHORT PAPERS IN INTERNATIONAL CONFERENCES (CORE RANK: A)

- [ICSME19] K. Gallaba, "Improving the Robustness and Efficiency of Continuous Integration and Deployment", In *Proceedings of the International Conference on Software Maintenance and Evolution (ICSME)*, pp. 619–623, Sep 2019. [[📄](#) [PDF](#)]
- [MSR19] D. Abrić, O. E. Clark, M. Caminiti, K. Gallaba, and S. McIntosh, "Can Duplicate Questions on Stack Overflow Benefit the Software Development Community?", In *Proceedings of the 16th International Conference on Mining Software Repositories (MSR)*, Mining challenge, pp. 230–234, May 2019. [[📄](#) [PDF](#)]

- [MSR18a] N. Rabbani, M. S. Harvey, S. Saquif, K. Gallaba, and S. McIntosh, "Revisiting 'Programmers' Build Errors' in the Visual Studio Context", In *Proceedings of the 15th International Conference on Mining Software Repositories (MSR), Mining challenge*, pp. 98–101, May 2018. [[PDF](#)]
- [MSR18b] R. Amlekar, A. F. R. Gamboa, K. Gallaba, and S. McIntosh, "Do Software Engineers Use Autocompletion Features Differently Than Other Developers?", In *Proceedings of the 15th International Conference on Mining Software Repositories (MSR), Mining challenge*, pp. 86–89, May 2018. [[PDF](#)]
- [MSR17a] M. Manglaviti, E. Coronado-Montoya, K. Gallaba, and S. McIntosh, "An Empirical Study of the Personnel Overhead of Continuous Integration", In *Proceedings of the 14th International Conference on Mining Software Repositories (MSR), Mining challenge*, pp. 471–474, May 2017. [[PDF](#)]
- [MSR17b] Y. Khan, Y. Gupta, K. Gallaba, and S. McIntosh, "The Impact of the Adoption of Continuous Integration on Developer Attraction and Retention", In *Proceedings of the 14th International Conference on Mining Software Repositories (MSR), Mining challenge*, pp. 491–494, May 2017. [[PDF](#)]

ACADEMIC SERVICE

REVIEWER

International Conference on Software Maintenance and Evolution (**ICSME**) - Industry Track 2024
 International Conference on Software Engineering (**ICSE**) - SEIP Track 2024
 International Conference on Software Analysis, Evolution and Reengineering (**SANER**) - Research Track 2024
 International Conference on AI Foundation Models and Software Engineering (**FORGE**) 2024
 International Conference on Mining Software Repositories (**MSR**) - Junior PC 2023
 International Conference on Mining Software Repositories (**MSR**) - Industry Track 2023
 Empirical Software Engineering Journal (**EMSE**) 2021
 IEEE Transactions on Software Engineering (**TSE**) 2019
 Journal of Systems and Software (**JSS**) 2019
 International Conference on Program Comprehension (**ICPC**) - Tools Track 2019
 Journal of Information and Software Technology (**IST**) 2018
 International Conference on Object-oriented Programming, Systems, Languages, and Applications (**OOPSLA**) - Artifact Evaluation Committee 2017

CO-REVIEWER

International Conference on Software Analysis, Evolution, and Reengineering (**SANER**) 2019
 International Conference on Mining Software Repositories (**MSR**) 2018
 Canadian Conference on Electrical and Computer Engineering (**CCECE**) 2018
 International Conference on Software Maintenance and Evolution (**ICSME**) 2017

ORGANIZING COMMITTEE

International Conference on AI-powered Software (**Alware**) - Proceedings Chair 2024
 International Working Conference on Source Code Analysis and Manipulation (**SCAM**) - Social Media Co-chair 2021

MENTORING & TEACHING EXPERIENCE

Undergraduate Students (Co-advised with Dr. Shane McIntosh)

Durham Abrie, Oliver Clark, Matthew Caminiti Sep 2018 – Apr 2019
 Co-authored Papers: MSR19

Rahul Amlekar, Noam Rabbani, Mike Harvey, Sadnan Saquif, Andrés Felipe Rincón Gamboa Sep 2017 – Apr 2018
 Co-authored Papers: MSR18a, MSR18b

Marco Manglaviti, Eduardo Coronado-Montoya, Yash Gupta, Yusaira Khan Sep 2016 – Apr 2017
 Co-authored Papers: MSR17a, MSR17b

Teaching Assistant

McGill University, Montréal, QC, Canada
ECSE321 Introduction to Software Engineering Fall 2017

University of British Columbia, Vancouver, BC, Canada
EECE416 Software Testing and Analysis Winter II 2014

**OPEN SOURCE
CONTRIBUTIONS****Gephi**, Open source graph visualization and manipulation software

System Developer/GSoC Student

Jan 2011 – May 2011

Developed an automated Maven build to fasten the release process of Gephi. [[Team Profile](#)] [[Details](#)]**Crawljax**, a tool for automatically crawling and testing modern web applications

Contributor/Maintainer

Nov 2013 – Aug 2014

Fixing bugs, updating dependencies, and other routine maintenance. [[Project](#)]**Other,**

Localization Contributor

Jan 2008 – Present

Localization of FOSS projects including Ubuntu, Sugar Labs, GNOME and Miro [[Launchpad](#)]

Minor Contributor

Feb 2011 – Present

Contributed via patches and pull requests to well-known OSS projects. [[GitHub](#)]