

# 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, 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 Center for Software Excellence, Toronto, ON, Canada

**Senior Engineer | Researcher**, AI Engineering Group Jun 2021 – Present  
Conducting research and building tools to improve robustness of ML pipelines.

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

## 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)

- [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)*, To appear, 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

Empirical Software Engineering Journal ( <b>EMSE</b> )	2021
IEEE Transactions on Software Engineering ( <b>TSE</b> )	2019
Journal of Systems and Software ( <b>JSS</b> )	2019
International Conference on Program Comprehension ( <b>ICPC</b> ) - Tools Track	2019
Journal of Information and Software Technology ( <b>IST</b> )	2018
International Conference on Object-oriented Programming, Systems, Languages, and Applications ( <b>OOPSLA</b> ) - Artifact Evaluation Committee	2017

### CO-REVIEWER

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

## MENTORING & TEACHING EXPERIENCE

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

Durham Abric, 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, MSR1b	
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	
<b>ECSE321</b> Introduction to Software Engineering	Fall 2017
University of British Columbia, Vancouver, BC, Canada	
<b>EECE416</b> Software Testing and Analysis	Winter II 2014
<b>EECE310</b> Software Engineering	Winter II 2013 & Winter I 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. [ <a href="#">Team Profile</a> ] [ <a href="#">Details</a> ]	

### 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. [ <a href="#">Project</a> ]	

### Other,

Localization Contributor	Jan 2008 – Present
Localization of FOSS projects including Ubuntu, Sugar Labs, GNOME and Miro [ <a href="#">Launchpad</a> ]	
Minor Contributor	Feb 2011 – Present
Contributed via patches and pull requests to well-known projects including GrapViz, acorn, bashlex, moment, and grommet. [ <a href="#">GitHub</a> ]	