Suhaib Mujahid, PhD

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Highlights of Qualifications:

- 5+ years of performing research related to software engineering, mining software repositories, and developer tools
- 15+ years of developing software through internships, freelancing, open-source and side projects
- 14 research publications at prestigious international software engineering conferences and in top journals, e.g., TSE, ICSE, FSE, MSR, EMSE
- 14 awards and recognitions from local and international entities

Education

Jan 2018 – Nov 2021
- **PhD in Software Engineering**
  Concordia University, Montreal, QC, Canada — GPA: 4.19/4.19
  – Received Outstanding Dissertation ranking

Sep 2016 – Dec 2017
- **MASc in Software Engineering**
  Concordia University, Montreal, QC, Canada — GPA: 4.15/4.30
  – Awarded the F. A. Gerard Prize for Best Master's Thesis

Feb 2011 – Dec 2015
- **BASc in Information Systems**
  Palestine Polytechnic University, Hebron, Palestine
  – Received the highest graduation project score ever in the history of the faculty
  – Was on the President's Honour List
  – Was on the Dean's Honour List

Experience

Academic

Sep 2016 – Present
- **Research Assistant,** Data-driven Analysis of Software Lab
  Concordia University, Montreal, QC, Canada

  Research Topics:
  – Mining Software Repositories
  – Dependency Management
  – Release Engineering
  – Machine Learning on Code
  – Defect Prediction and Avoidance
  – Software Architecture

Jan 2018 – Apr 2020
- **Teaching Assistant,** Dep. of Computer Science and Software Engineering
  Concordia University, Montreal, QC, Canada

Industry

Jul 2019 – Apr 2020
- **Software Engineering Intern**
  Societe Generale, Montreal, QC, Canada
  – Developed a tool to mine software repositories and predict risky changes using machine learning
  – Integrated the tool with Societe Generale's development environment

  Technical Skills: Go, Python, JavaScript/TypeScript, Scikit-learn, ONNX, React, Relay, GraphQL, MongoDB, and Kubernetes

Experience (continued)

Aug 2018 – Mar 2019 • **Data Scientist - Part Time**
Galilei Innovations Inc., Montreal, QC, Canada

– Developed a pilot data pipeline to analyze and link data from shopping mall traffic and retailers to help them better understand their customers

Technical Skills: Python, Pandas, SQL, and PostgreSQL

Mar 2018 – Nov 2018 • **Software Engineering Intern**
National Bank of Canada, Montreal, QC, Canada

– Improved an open-source mining software repositories system and integrated it with the internal development environment

– Identified the best performing machine learning model in predicting risky commits at the National Bank of Canada

Technical Skills: Python, R, JavaScript, SQL, PostgreSQL, and Docker Swarm

R&D Projects

Jan 2020 – Feb 2021 • **Pitfalls in the Go programming language**

– Identified problems and pitfalls in the usage of the Go type system.

– Extracted evidence that helped the Go team at Google to dispel misconception about specific language features.

– Proposed suggestions related to type safety that led to changes in the Go language.

Technical Skills: Go, Python, Matplotlib, Seaborn, and Latex

Apr 2018 – Present • **Managing open-source dependencies**

– Designed a technique to identify open-source dependencies that are likely to be deprecated.

– Designed a technique to detect breakage-inducing updates of open-source dependencies by leveraging tests from "the crowd"

– Developed a tool to measure community interest of `npm` packages (prototype: https://github.com/centrality-checker)

Technical Skills: Python, JavaScript, Node.js, Scikit-learn, and NetworkX

Mar 2018 – Present • **Predicting risky software changes using machine learning**

– Developed a scalable tool that mine software repositories and uses machine learning to predict potential bug inducing commits

– Proposed a novel online class imbalance learning algorithm to improve the state-of-the-art bug prediction algorithms

Technical Skills: Go, Python, TypeScript, libgit2, Scikit-learn, React, and Relay

Feb 2018 – Jan 2020 • **Removing noise from CI workflows**

– Proposed a novel machine learning technique to mine software repositories and detect commits that can be CI skipped

– Developed a tool that suggests skipping the CI for insignificant commits (Replicated by Google: https://github.com/google/git-presubmit-linter)

Technical Skills: Python, SQL, JavaScript, and Node.JS

Research Publications

Journal Articles

[J1] **Mujahid**, **S.**, Costa, D. E., Abdalkareem, R., Shihab, E., Saied, M. A., & Adams, B. (2021). Toward using package centrality trend to identify packages in decline. *IEEE Transactions on Engineering Management*, 1–15. doi:10.1109/TEM.2021.3122012

[J2] Chen, X., Abdalkareem, R., **Mujahid**, **S.**, Shihab, E., & Xia, X. (2021). Helping or not helping? why and how trivial packages impact the npm ecosystem. *Empirical Software Engineering Journal*. EMSE'21, *26*(2), 27. doi:10.1007/s10664-020-09904-w

[J3] Hoyos, J., Abdalkareem, R., **Mujahid**, **S.**, Shihab, E., & Bedoya, A. E. (2021). On the removal of feature toggles. *Empirical Software Engineering Journal*. EMSE'21, *26*(2), 15. doi:10.1007/s10664-020-09902-y

[J4] Costa, D. E., **Mujahid**, **S.**, Abdalkareem, R., & Shihab, E. (2021). Breaking type-safety in go: An empirical study on the usage of the unsafe package. *IEEE Transactions on Software Engineering Journal*. TSE'21, 1–1. doi:10.1109/TSE.2021.3057720

[J5] Abdalkareem, R., Oda, V., **Mujahid**, **S.**, & Shihab, E. (2020). On the impact of using trivial packages: An empirical case study on npm and pypi. *Empirical Software Engineering Journal*. EMSE'20, *25*(2), 1168–1204. doi:10.1007/s10664-019-09792-9

[J6] Abdalkareem, R., **Mujahid**, **S.**, & Shihab, E. (2020). A machine learning approach to improve the detection of CI skip commits. *IEEE Transactions on Software Engineering Journal*. TSE'20, *47*(3), 448–463. doi:10.1109/TSE.2020.2967380

[J7] Abdalkareem, R., **Mujahid**, **S.**, Shihab, E., & Rilling, J. (2019). Which commits can be CI skipped? *IEEE Transactions on Software Engineering Journal*. TSE'19, *47*(3), 448–463. doi:10.1109/TSE.2019.2897300

[J8] **Mujahid**, **S.**, Sierra, G., Abdalkareem, R., Shihab, E., & Shang, W. (2018). An empirical study of android wear user complaints. *Empirical Software Engineering Journal*. EMSE'18, *23*(6), 3476–3502. doi:10.1007/s10664-018-9615-8

Conference Proceedings

[C1] **Mujahid**, **S.**, Abdalkareem, R., Shihab, E., & McIntosh, S. (2020). Using others' tests to identify breaking updates. In *Proceedings of the 17th international conference on mining software repositories* (pp. 466–476). MSR'20. doi:10.1145/3379597.3387476

[C2] Cabral, G. G., Minku, L. L., Shihab, E., & **Mujahid**, **S.** (2019). Class imbalance evolution and verification latency in just-in-time software defect prediction. In *Proceedings of the 41st IEEE/ACM international conference on software engineering* (pp. 666–676). ICSE'19. doi:10.1109/ICSE.2019.00076

[C3] **Mujahid**, **S.**, Abdalkareem, R., & Shihab, E. (2018). Studying permission related issues in android wearable apps. In *Proceedings of the 2018 ieee international conference on software maintenance and evolution* (pp. 345–356). ICSME'18. doi:10.1109/ICSME.2018.00043

[C4] Abdalkareem, R., Nourry, O., Wehaibi, S., **Mujahid**, **S.**, & Shihab, E. (2017). Why do developers use trivial packages? an empirical case study on npm. In *Proceedings of the 11th joint european software engineering conference and symposium on the foundations of software engineering* (pp. 385–395). FSE'17. doi:10.1145/3106237.3106267

[C5] **Mujahid**, **S.** (2017). Detecting wearable app permission mismatches: A case study on android wear. In *Proceedings of the 11th joint european software engineering conference and symposium on the foundations of software engineering* (pp. 1065–1067). FSE'17. doi:10.1145/3106237.3121279

[C6] **Mujahid**, **S.**, Sierra, G., Abdalkareem, R., Shihab, E., & Shang, W. (2017). Examining user complaints of wearable apps: A case study on android wear. In *Proceedings of the 4th IEEE/ACM international conference on mobile software engineering and systems* (pp. 96–99). MOBILESoft'17. doi:10.1109/MOBILESoft.2017.25

Theses

[T1] **Mujahid**, **S.** (2021). *Effective dependency management for the javascript software ecosystem* (Doctoral dissertation, Concordia University, Montreal, Quebec ,Canada).

[T2] **Mujahid**, **S.** (2018). *Determining and detecting permission issues of wearable apps* (Master's thesis, Concordia University, Montreal, Quebec ,Canada). Retrieved from https://spectrum.library.concordia.ca/983405

Under Review Papers

[S1] **Mujahid**, **S.**, Costa, D. E., Abdalkareem, R., & Shihab, E. (2021). *Where to go now? finding alternatives for declining packages in the npm ecosystem.* Submited to IEEE Transactions on Software Engineering Journal (TSE).

[S2] **Mujahid**, **S.**, Abdalkareem, R., & Shihab, E. (2021). *What are the characteristics of highly-used packages? a case study on the npm ecosystem.* Submited to IEEE Transactions on Software Engineering Journal (TSE).

Honours and Awards

Achievements

2020 • **Arctic Code Vault Contributor**
Contributed code to several projects in the GitHub Archive Program

2019 • **Best Master's Thesis**
Awarded the F.A. Gerard Prize for my master's thesis at Concordia University

2016 • **First Place in a Business Competition**
The Business Simulation Competition at the College of Administrative Sciences and Informatics

2015 • **President's Honour List**
Achieved for my bachelor's degree at Palestine Polytechnic University

2014 • **Dean's Honour List**
Achieved for my bachelor's degree at Palestine Polytechnic University

Publications

2017 • **Third Place in Microsoft Research Competition** for Graduate Students at FSE, Germany
Paper [C5] FSE'17: Detecting wearable app permission mismatches: a case study on Android Wear.

• **Featured in a Concordia News Release**
Paper [C4] FSE'17: Why Do Developers Use Trivial Packages? An Empirical Case Study on npm.

Financial

2020	• Concordia University Accelerator Award	$5,000
2018	• Concordia University Conference and Exposition Award	$1,000
	• GSA's Conference Funding Subsidy	$250
2017	• ACM FSE Student Research Competition Award, Germany	$700
	• ACM SIGSOFT CAPS Award	$533
	• Concordia University Tuition Award of Excellence	$35,949
	• Concordia University Conference and Exposition Award	$1,000
	• Concordia University 25th Anniversary Scholarship	$12,000
2015	• Palestine Polytechnic University Award of Excellence	JOD 550
2014	• Palestine Polytechnic University Award of Excellence	JOD 600

Talks and Posters

Conference Talks

May 2021 • Towards Using Package Centrality Trend to Identify Packages in Decline
In the Consortium for Software Engineering Research (CSER), Ottawa, Canada (presented online)

May 2020 • Using Others' Tests to Identify Breaking Updates
In the International Conference on Mining Software Repositories (MSR), Seoul, South Korea (presented online)

Sep 2018 • Studying Permission Related Issues in Android Wearable Apps
In the IEEE International Conference on Software Maintenance and Evolution (ICSME), Madrid, Spain

Sep 2017 • Detecting Wearable App Permission Mismatches: A Case Study on Android Wear
In the ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), Paderborn, Germany

May 2017 • Examining User Complaints of Wearable Apps: A Case Study on Android Wear
In the IEEE/ACM International Conference on Mobile Software Engineering and Systems (MOBILESoft), Buenos Aires, Argentina

Posters

Oct 2018 • Detecting Breakage Updates on npm Ecosystem
In the Consortium for Software Engineering Research (CSER), Toronto, Canada

Oct 2017 • Manifest Mismatches In Wearable Apps: A Case Study On Android Wear
In the Consortium for Software Engineering Research (CSER), Toronto, Canada

Sep 2017 • Detecting Wearable App Permission Mismatches: A Case Study on Android Wear
In the ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), Paderborn, Germany

May 2017 • Using Analytics for Effective Step Detection
In the Software Engineering Research Centre (SERC), Montreal, Canada

Professional Service and Volunteers

External Reviewer

2021 • ACM Transactions on Software Engineering and Methodology Journal (TOSEM)

2019 • International Conference on Mining Software Repositories (MSR)

2018 • Springer's Journal of Empirical Software Engineering (EMSE)

2017 • IEEE International Conference on Program Comprehension (ICPC)

Student Volunteer

2019 • ACM/IEEE International Conference on Software Engineering (ICSE), Montreal, Canada

2018 • Concordia University Welcome International Students, Montreal, Canada
• ACM CHI Conference on Human Factors in Computing Systems, Montreal, Canada

2017 • ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), Paderborn, Germany

2015 • Palestine Polytechnic University Days Event, Hebron, Palestine

Certificates

July 2018 • **Leadership Essentials Certificate**
Concordia University, Montreal, Canada

Certificates (continued)

May 2017 • **School of Automated Software Testing**
University of Genoa, Genova, Italy

May 2015 • **Cisco Certified Network Associate (CCNA)**
Palestine Polytechnic University, Hebron, Palestine

Training Workshops

Technical Tutorials

May 2019	• Running Applications on Kubernetes	Google
	• Train a model with TensorFlow and run it in the browser	Google

Leadership and Management

Oct 2017	• Leading Teams for Success	Concordia University
	• Professional Negotiation and Persuasion Skills	Concordia University
	• Managing People's Performance	Concordia University
	• Data Analytics Essentials: Can we always trust numbers?	Concordia University
Sep 2017	• Solving Problems and Seeing the Big Picture	Concordia University
	• Foundations of Leadership	Concordia University
	• Navigating Emotional Intelligence	Concordia University

Other Workshops

Aug 2017	• Health and Safety Workshop for Teaching Assistants	Gina Cody School
Feb 2017	• Research Funding and Networking Strategies with Mitacs	Concordia University