Ajay Kumar Jha
Curriculum Vitae

QBB 258 A23, Department of Computer Science
North Dakota State University
Fargo, ND 58102, USA
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Research Interest

Software engineering, software testing and maintenance, mining software repositories, and empirical software engineering.

Professional Experience

Assistant Professor (August 2022 – Present)
North Dakota State University, Fargo, ND, USA

Postdoctoral Researcher (March 2020 – July 2022)
University of Alberta, Edmonton, Alberta, Canada

Postdoctoral Researcher (March 2017 – February 2020)
Kyungpook National University, Daegu, Republic of Korea

Co-founder (February 2009 – June 2011)
Unified Technology Consultancy, Kathmandu, Nepal.

Account Manager (March 2008 – August 2008)
V2Soft, Bangalore, India.

Business Development Manager (September 2007 – January 2008)
FoxsysTech, Gurgaon, India.

Co-founder (November 2005 – August 2007)
MindproSoft, Bangalore, India.

Education

Ph.D. in Computer Science & Engineering, February 2017
Kyungpook National University, Republic of Korea

M.S. in Computer Science, August 2013
Kyungpook National University, Republic of Korea

B.Sc. in Information Technology, January 2004
Sikkim Manipal University of Health, Medical & Technological Sciences, India

Publication

- **Ajay Kumar Jha**, Sarah Nadi. Migrating Unit Tests Across Java Applications. In *Proceedings of the 24th IEEE International Conference on Source Code Analysis and Manipulation (SCAM)*. pp. 131-142. 2024.

- Sai Kiran Bhrugumalla, **Ajay Kumar Jha**. TRec: A Regression Test Recommender for Java Projects. In *Proceedings of 40th IEEE International Conference on Software Maintenance and Evolution (ICSME)*. pp. 903-907. 2024. Tool Demo Track

- Mohayeminul Islam, **Ajay Kumar Jha**, Ildar Akhmetov, and Sarah Nadi. Characterizing Python Library Migrations. In *Proceedings of 32nd ACM Symposium on the Foundations of Software Engineering (FSE)*. pp. 92-114. 2024.

- Mohayeminul Islam, **Ajay Kumar Jha**, Sarah Nadi, and Ildar Akhmetov. PyMigBench: A Benchmark for Python Library Migration. In *Proceedings of 20th IEEE International Conference on Mining Software Repositories (MSR)*. pp. 511-515. 2023. Data and Tool Track.

- **Ajay Kumar Jha**, Mohayeminul Islam, and Sarah Nadi. JTestMigBench and JTestMigTax: A benchmark and taxonomy for unit test migration. In *Proceedings of 30th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER)*. pp. 713-717. 2023. ERA Track.

- Mansur Gulami, **Ajay Kumar Jha**, Sarah Nadi, Karim Ali, Emily Jiang, and Yee-Kang Chang. A Human-in-the-loop Approach to Generate Annotation Usage Rules: A Case Study with MicroProfile. In *Proceedings of Annual International Conference on Computer Science and Software Engineering (CASCON),* pp 91-100. 2022.

- Batyr Nuryyev, **Ajay Kumar Jha**, Sarah Nadi, Yee-Kang Chang, Emily Jiang, and Vijay Sundaresan. Mining Annotation Usage Rules: A Case Study with MicroProfile. In *Proceedings of 38th IEEE International Conference on Software Maintenance and Evolution (ICSME)*. pp. 553-562. 2022. Industry Track

- **Ajay Kumar Jha** and Sarah Nadi. Annotation practices in Android apps. In *Proceedings of 20th International Working Conference on Source Code Analysis and Manipulation (SCAM)*, pp. 132-142. IEEE, 2020.

- Sooyong Jeong, **Ajay Kumar Jha**, Youngsul Shin, and Woo Jin Lee. A log-based testing approach for detecting faults caused by incorrect assumptions about the environment. *IEICE Transactions on Information and Systems*, 103(1), pp. 170-173.

- **Ajay Kumar Jha**, Sunghee Lee, and Woo Jin Lee. An empirical study of configuration changes and adoption in Android apps. *Journal of Systems and Software (JSS)*. 156 (2019), pp. 164-180.

- **Ajay Kumar Jha**, Sunghee Lee, and Woo Jin Lee. Characterizing Android-specific crash bugs. In *Proceedings of the 6th IEEE/ACM International Conference on Mobile Software Engineering and Systems (MobileSoft)*, pp. 111-122. IEEE Press, 2019.

- **Ajay Kumar Jha**, Deok Yeop Kim, and Woo Jin Lee. A framework for testing Android apps by reusing test cases. In *Proceedings of the 6th IEEE/ACM International Conference on Mobile Software Engineering and Systems (MobileSoft)*, pp. 20-24. 2019. Vision Track.

- **Ajay Kumar Jha** and Woo Jin Lee. An empirical study of collaborative model and its security risk in Android. *Journal of Systems and Software (JSS)*. 137 (2018), pp. 550-562.

- **Ajay Kumar Jha**, Sunghee Lee, and Woo Jin Lee. Developer mistakes in writing Android manifests: An empirical study of configuration errors. In *Proceedings of the 14th International Conference on Mining Software Repositories (MSR),* pp. 25-36. IEEE Press, 2017.

- **Ajay Kumar Jha** and Woo Jin Lee. Analysis of permission-based security in android through policy expert, developer, and end user perspectives. *Journal of Universal Computer Science (JUCS)*, vol. 22, no. 4, pp. 459-474, 2016.

- **Ajay Kumar Jha**, Sunghee Lee, and Woo Jin Lee. Modeling and test case generation of inter-component communication in android. In *Proceedings of the Second ACM International Conference on Mobile Software Engineering and Systems (MobileSoft),* pp. 113-116. IEEE Press, 2015.

- **Ajay Kumar Jha**, Seungmin Lee, and Woo Jin Lee. Permission-based security in android application: from policy expert to end user. In *Proceedings of the 2015 Research in Adaptive and Convergent Systems (RACS),* pp. 319-320. ACM, 2015.

- Soo Young Jang, **Ajay Kumar Jha**, and Woo Jin Lee. Virtual prototype generation by shockwave flash for simulating HW components of embedded system. In *Proceedings of the 29th Annual ACM Symposium on Applied Computing (SAC),* pp. 1755-1756. 2014.

- **Ajay Kumar Jha** and Woo Jin Lee. Activity-based Event Capture and Replay Technique for Reproducing Crashes in Android Applications. *IEMEK Journal of Embedded Systems and Applications*. 9 (1), 1-9. 2014

- **Ajay Kumar Jha**, Sooyong Jeong, and Woo Jin Lee. Value-deterministic search-based replay for android multithreaded applications. In *Proceedings of the 2013 Research in Adaptive and Convergent Systems (RACS),* pp. 381-386. ACM, 2013.

- **Ajay Kumar Jha** and Woo Jin Lee. Capture and replay technique for reproducing crash in android applications. In *Proceedings of the 12th IASTED International Conference in Software Engineering,* pp. 783-790. 2013.

Student Supervision

Ph.D.

    Rupinder Kaur, North Dakota State University (March 2024 - current)
    Mohayeminul Islam, University of Alberta (Oct 2021 - current)
    Amjad Allobadi, North Dakota State University (Nov 2022 – Dec 2023)

Masters

    Suraj Pokhrel, North Dakota State University (Aug 2024 - current)
    David Owuor, North Dakota State University (May 2024 - current)
    Frank Kendermah, North Dakota State University (Feb 2024 - current)
    Suraj Bhatta, North Dakota State University (Jan 2023 – Dec 2024)
    Sai Kiran Bhrugumalla, North Dakota State University (March 2023 – July 2024)
    Mansur Gulami, University of Albert (Feb 2022 – July 2022)
    Batyr Nuryyev, University of Alberta (July 2020 – Nov 2021)

Undergrad

    Xichen Pan, University of Alberta (May 2021 – Sep 2021)

Teaching

    CSCI 412. Mobile Software Engineering, NDSU – Fall'23, 24
    CSCI 712. Mobile Software Engineering, NDSU – Spring'25
    CSCI 714. Software Project Planning and Estimation, NDSU – Fall'22, 23, 24
    CSCI 783. Topics in Software Systems, NDSU – Spring'23, 24
    CSCI 790. Graduate Seminar, NDSU:
                Optimizing Regression Test Suites - Spring'24
                LLMs for Software Testing and Maintenance - Fall'24
                Code Smell and Refactoring – Spring'25

Service

Session Chair:

    ICSME: International Conference on Software Maintenance and Evolution - 2024
    SANER: International Conference on Software Analysis, Evolution and Reengineering – 2022
    MSR: International Conference on Mining Software Repositories - 2022

Program Committee Member:

    MSR: International Conference on Mining Software Repositories – 2021 (Technical track), 2022 (Technical track), 2024 (Technical track), 2025 (Technical track)
    SANER: International Conference on Software Analysis, Evolution and Reengineering – 2021 (ERA track), 2022 (ERA track), 2024 (Tools Demo track)
    ICSME: International Conference on Software Maintenance and Evolution - 2024 (Technical track), 2025 (Technical track)
    MobileSoft: International Conference on Mobile Software Engineering and Systems - 2022 (Research track), 2023 (Research track)
    FSE: International Symposium on the Foundations of Software Engineering – 2021 (Artifact track), 2022 (Artifact track)
    ASE: International Conference on Automated Software Engineering – 2021 (Artifact track), 2022 (Artifact track)
    ICSE: International Conference on Software Engineering – 2023 (Demo track)

Reviewer:

    TSE: IEEE Transactions on Software Engineering – 2020, 2021, 2022, 2024, 2025
    ESE: Empirical Software Engineering - 2021, 2022

JSPE: Journal of Software: Practice and Experience - 2020

Scholarships and Awards

National Research Foundation of Korea (March 2017 – February 2020)
Postdoctoral Researcher Funding

Brain Korea 21/21 Plus (September 2011 – February 2017)
Research assistantship during my Master's and Ph.D programs

KNU Honors Scholarship (September 2013 – August 2015)
Kyungpook National University scholarship for the Ph.D. program.

KNU Honors Scholarship (September 2011 – February 2013)
Kyungpook National University scholarship for the M.S. program.