

SHUAI SHAO

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BIRTH: February, 1996



EDUCATION

Hebei University of Science & Technology	Sep 2018-Jan 2021
School of Information Science and Engineering	
Computer Science and Technology Master	Shijiazhuang, China
Supervisor: Associate Prof. Yang Zhang	
Tangshan Normal University	Sep 2014-Jun 2018
Computer Science and Technology Bachelor	Tangshan, China

RESEARCH EXPERIENCE

Research Interests:

Software Refactoring, Program Analysis, Parallel Programming. My recent research includes an automated refactoring approach for fine-grained locks. Several static analyses, such as visitor pattern analysis, alias analysis, and side-effect analysis are leveraged in this approach. A pushdown automaton is proposed to identify the lock patterns. I implement an automatic refactoring tool as the Eclipse plug-in. I have a strong interest in program analysis, and also interested in software refactoring and automatic software repair.

Publications:

1. Zhang Yang, **Shao Shuai**, Zhai Juan, et al. FineLock: automatically refactoring coarse-grained locks into fine-grained locks. Proceedings of the 29th ACM SIGSOFT International Symposium on Software Testing and Analysis (**ISSTA' 2020**), 2020: 565-568.
2. Zhang Yang, **Shao Shuai**, Zhang Dongwen. An Automated Refactoring Approach for Fine-grained Lock Based on Pushdown Automaton. **Journal of Software**, 2020. (in Chinese, accepted)
张杨, 邵帅, 张冬雯. 基于下推自动机的细粒度锁自动重构方法. **软件学报**, 2020. (已录用)
3. Zhang Yang, **Shao Shuai**, Liu Huan, et al. Refactoring Java programs for customizable locks based on bytecode transformation. **IEEE Access**, 2019, 7: 66292-66303.
4. Zhang Yang, **Shao Shuai**, Ji Minghan, et al. An Automated Refactoring Approach to Improve IoT Software Quality. **Applied Sciences**, 2020, 10(1): 413-427.

Projects:

1. Innovation Foundation Project of Hebei Province (CXZZSS2020094).
 - Refactored many applications manually that use the Java lock mechanism. Compared the performance between the coarse-grained locks and fine-grained locks to find the most suitable application scenarios for fine-grained locks.

- Designed the pre-conditions for the refactoring.
 - Designed the refactoring algorithm from coarse-grained locks into fine-grained locks through program analysis such as side-effect analysis and alias analysis.
 - Proposed a lock inference approach based on pushdown automaton.
2. Scientific Research Foundation of Hebei Educational Department (ZD2019093).
 - Implemented a prototype refactoring tool leveraging WALA, and the prototype is integrated as a plug-in of Eclipse.
 - Evaluated the effectiveness and efficiency of the tool in eleven real-world applications including HSQLDB, Jenkins, Cassandra, etc. Experimental results show that the tool can effectively refactor locks.
 3. National Natural Science Foundation of Hebei Province (F2019208305).
 - Studied the consistency detection approach of refactoring synchronized locks into read/write locks.
 - Proposed the consistency detection approach for fine-grained locks refactoring.

Conference:

1. Give a presentation of our paper at ISSTA'2020 Jul 2020

AWARDS

1. National Scholarship, China 2020.
2. First-class Scholarship, Hebei University of Science & Technology 2019-2020.
3. First-class Scholarship, Hebei University of Science & Technology 2020-2021.

SKILL

1. Proficient in Java, frequent user of python, and familiar with C/C++.
2. Proficient in Linux platform development.
3. Frequent user of WALA and Eclipse JDT.
4. Familiar with TensorFlow.

Qualification

1. Qualification of Computer and Software Professional (Software Designer).