

Jihyeok Park (박지혁)

ASSISTANT PROFESSOR

Dept. of Computer Science and Engineering, Korea University, 145, Anam-ro, Seongbuk-gu, Seoul 02841, Republic of Korea

☎ (+82) 10-4126-8418 | ✉ jihyeok_park@korea.ac.kr | ✉ jhpjhp0223@gmail.com | 🌐 park.jihyeok.site | 📱 jhnaldo | 📺 jhnaldo

Research Interests

The ultimate goal is to help developers design and implement high-quality software using diverse programming language techniques:

- **program analysis** for automatically understanding program behaviors and detecting software bugs and vulnerabilities.
- **mechanized specification** to fill the gap between human-readable specifications and machine-friendly software.
- **program synthesis** to lessen the burden of software development by automatically generating programs.
- **automated testing** to generate test cases for software automatically on behalf of humans.

Education

Integrated M.S. & Ph.D in School of Computing

KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KAIST)

- Ph.D. Thesis - JavaScript Static Analysis for Evolving Language Specifications
- Programming Language Research Group
- Advisor: Sukyoung Ryu

Daejeon, Republic of Korea

Mar. 2016 - Feb. 2022

B.S in School of Computing and Mathematical Science

KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KAIST)

Daejeon, Republic of Korea

Mar. 2012 - Feb. 2016

Work Experience

Mar. 2023 - PRESENT **Assistant Professor, Korea University**

Seoul, Republic of Korea

Feb. 2022 - Feb. 2022 **Post Doctoral Fellow, Oracle Labs**

Brisbane, Australia

Publications

Automatically Deriving JavaScript Static Analyzers from Specifications using Meta-Level Static Analysis

JHYEOK PARK, SEUNGMIN AN, AND SUKYOUNG RYU

PROCEEDINGS OF THE 30TH ACM JOINT EUROPEAN SOFTWARE ENGINEERING CONFERENCE AND SYMPOSIUM ON THE FOUNDATIONS OF SOFTWARE ENGINEERING (ESEC/FSE)

Nov. 2022

Filling the Gap between the JavaScript Language Specification and Tools using the JISET Family

SUKYOUNG RYU, JHYEOK PARK, AND SEUNGMIN AN

PROCEEDINGS OF THE 43RD ACM SIGPLAN CONFERENCE ON PROGRAMMING LANGUAGE DESIGN AND IMPLEMENTATION (PLDI) TUTORIAL

Jun. 2022

JSTAR: JavaScript Specification Type Analyzer using Refinement

JHYEOK PARK, SEUNGMIN AN, WONHO SHIN, YUSUNG SIM, AND SUKYOUNG RYU

PROCEEDINGS OF THE 36TH IEEE/ACM INTERNATIONAL CONFERENCE ON AUTOMATED SOFTWARE ENGINEERING (ASE)

Nov. 2021

Accelerating JavaScript Static Analysis via Dynamic Shortcuts

JOONYOUNG PARK*, JHYEOK PARK*, DONGJUN YOUN, AND SUKYOUNG RYU (*EQUALLY CONTRIBUTED)

PROCEEDINGS OF THE 29TH ACM JOINT EUROPEAN SOFTWARE ENGINEERING CONFERENCE AND SYMPOSIUM ON THE FOUNDATIONS OF SOFTWARE ENGINEERING (ESEC/FSE)

Aug. 2021

JavaScript Static Analysis with Evolving Engines and Specification

JIHYEOK PARK

PROCEEDINGS OF THE 35TH EUROPEAN CONFERENCE ON OBJECT-ORIENTED PROGRAMMING AND PROCEEDINGS OF THE 30TH ACM SIGSOFT INTERNATIONAL SYMPOSIUM ON SOFTWARE TESTING AND ANALYSIS DOCTORAL SYMPOSIUM TRACK (ECOOP/ISSTA DS)

Jul. 2021

A Survey of Parametric Static Analysis

JIHYEOK PARK*, HONGKI LEE*, AND SUKYOUNG RYU (*EQUALLY CONTRIBUTED)

ACM COMPUTING SURVEYS (CSUR), VOLUME 54, ISSUE 7, ARTICLE NO. 149, PP 1–37

Jul. 2021

JEST: N+1-version Differential Testing of Both JavaScript Engines and Specification

JIHYEOK PARK, SEUNGMIN AN, DONGJUN YOUN, GYEONGWON KIM, AND SUKYOUNG RYU

PROCEEDINGS OF THE 43RD ACM/IEEE INTERNATIONAL CONFERENCE ON SOFTWARE ENGINEERING (ICSE)

May 2021

ACM SIGSOFT DISTINGUISHED PAPER AWARD

JISET: JavaScript IR-based Semantics Extraction Toolchain

JIHYEOK PARK, JIHEE PARK, SEUNGMIN AN, AND SUKYOUNG RYU

PROCEEDINGS OF THE 35TH IEEE/ACM INTERNATIONAL CONFERENCE ON AUTOMATED SOFTWARE ENGINEERING (ASE)

Sep. 2020

Towards Analysis and Bug Finding of JavaScript Web Applications in the Wild

SUKYOUNG RYU, JIHYEOK PARK, AND JOONYOUNG PARK

IEEE SOFTWARE, VOLUME 36, ISSUE 3, PP 74–82

Jun. 2019

Path Dependent Types with Path-Equality

JAEMIN HONG, JIHYEOK PARK, AND SUKYOUNG RYU

PROCEEDINGS OF THE 9TH ACM SIGPLAN SYMPOSIUM ON SCALA

Sep. 2018

A Framework for Dynamic Inter-Device Task Dispatch with Eventual Consistency

JIHYEOK PARK, JOONYOUNG PARK, YOONKYONG LEE, CHUL-JOO KIM, BYOUNGOH KIM, AND SUKYOUNG RYU

PROCEEDINGS OF THE 2ND INTERNATIONAL WORKSHOP ON PROGRAMMING TECHNOLOGY FOR THE FUTURE WEB (ProWeb)

Apr. 2018

Toward Building Memory-safe Network Functions with Modest Performance Overhead

KEUNHONG LEE, SHINAE WOO, SANGHYEON SEO, JIHYEOK PARK, SUKYOUNG RYU, AND SUE MOON

PROCEEDINGS OF THE 3RD SIGCOMM WORKSHOP ON NETWORKING AND PROGRAMMING LANGUAGES (NETPL '17)

Aug. 2017

Revisiting Recency Abstraction for JavaScript: Towards an Intuitive, Compositional, and Efficient Heap Abstraction

JIHYEOK PARK, XAVIER RIVAL AND SUKYOUNG RYU

PROCEEDINGS OF THE INTERNATIONAL WORKSHOP ON THE STATE OF THE ART IN JAVA PROGRAM ANALYSIS (SOAP)

Jun. 2017

BEST PAPER AWARD

Analysis of JavaScript Web Applications Using SAFE 2.0

JIHYEOK PARK, YEONHEE RYU, JOONYOUNG PARK, AND SUKYOUNG RYU

PROCEEDINGS OF THE 39TH INTERNATIONAL CONFERENCE ON SOFTWARE ENGINEERING (ICSE) DEMONSTRATIONS TRACK

May 2017

JavaScript API Misuse Detection by Using TypeScript

JIHYEOK PARK

PROCEEDINGS OF THE 13TH INTERNATIONAL CONFERENCE ON MODULARITY

Apr. 2014

ACM STUDENT RESEARCH COMPETITION 3RD

Honors & Awards

Mar. 2022	Ph.D. Dissertation Award , College of Engineering, KAIST	Daejeon, Republic of Korea
Feb. 2022	An Outstanding Ph.D. Thesis , School of Computing, KAIST	Daejeon, Republic of Korea
May 2021	ACM SIGSOFT Distinguished Paper Award , ICSE 2021	Madrid, Spain
Dec. 2020	PhD Fellowship Award , NAVER Corp.	Daejeon, Republic of Korea
Sep. 2019	Outstanding Teaching Assistant Award , School of Computing, KAIST (CS320)	Daejeon, Republic of Korea
Feb. 2019	Outstanding Teaching Assistant Award , School of Computing, KAIST (CS320)	Daejeon, Republic of Korea
Aug. 2018	Outstanding Teaching Assistant Award , School of Computing, KAIST (CS320)	Daejeon, Republic of Korea
Aug. 2017	Outstanding Teaching Assistant Award , School of Computing, KAIST (CS320)	Daejeon, Republic of Korea
Jun. 2017	Best Paper , International Workshop on the State Of the Art in Java Program Analysis (SOAP)	Barcelona, Spain
Feb. 2017	Outstanding Teaching Assistant Award , School of Computing, KAIST (CS320)	Daejeon, Republic of Korea
Sep. 2016	Outstanding Teaching Assistant Award , School of Computing, KAIST (CS109)	Daejeon, Republic of Korea
Feb. 2016	Magna Cum Laude (GPA: 3.88/4.3) , School of Computing, KAIST	Daejeon, Republic of Korea
Sep. 2014	Workshop 3rd Award , URP Program, KAIST	Daejeon, Republic of Korea
Apr. 2014	ACM Student Research Competition 3rd , International Conference on Modularity 2014	Lugano, Swiss
Mar. 2014	Honor Program , School of Computing, KAIST	Daejeon, Republic of Korea
Jul. 2013	KAIST Presidential Fellowship , School of Computing, KAIST	Daejeon, Republic of Korea

Teaching

TEACHER

2023 Spring	COSE 215: Theory of Computation , Korea University	Seoul, Republic of Korea
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TEACHING ASSISTANT

2019 Fall	CS320: Programming Languages course , KAIST	Daejeon, Republic of Korea
2019 Spring	CS320: Programming Languages course , KAIST	Daejeon, Republic of Korea
2018 Fall	CS408: Computer Science Project course , KAIST	Daejeon, Republic of Korea
2018 Fall	CS320: Programming Languages course , KAIST	Daejeon, Republic of Korea
2018 Spring	CS320: Programming Languages course , KAIST	Daejeon, Republic of Korea
2017 Fall	CS492: Special Topics in Computer Science <Program Analysis> , KAIST	Daejeon, Republic of Korea
2017 Fall	CS320: Programming Languages course , KAIST	Daejeon, Republic of Korea
2017 Spring	CS320: Programming Languages course , KAIST	Daejeon, Republic of Korea
2016 Fall	CS320: Programming Languages course , KAIST	Daejeon, Republic of Korea
2016 Spring	CS109: Programming Practice course , KAIST	Daejeon, Republic of Korea

Talks

Seminar at The 25th Korea Conference On Software Engineering (KCSE 2023)	Pyeongchang, Republic of Korea
PRESENTER FOR <AUTOMATICALLY DERIVING JAVASCRIPT STATIC ANALYZERS FROM SPECIFICATIONS USING META-LEVEL STATIC ANALYSIS>	Jan. 2023
Seminar at Korea Software Congress (KSC) 2022	Jeju, Republic of Korea
PRESENTER FOR <AUTOMATICALLY DERIVING JAVASCRIPT STATIC ANALYZERS FROM SPECIFICATIONS USING META-LEVEL STATIC ANALYSIS>	Dec. 2022
Invited Talk at SIGPL Winter School 2022	Online
PRESENTER FOR <JAVASCRIPT STATIC ANALYSIS FOR EVOLVING LANGUAGE SPECIFICATIONS>	Feb. 2022
Invited Talk at Software Disaster Research Center Agile & Automated Response & Repair (STAAR) Workshop	Online
PRESENTER FOR <JAVASCRIPT STATIC ANALYSIS FOR EVOLVING LANGUAGE SPECIFICATIONS>	Feb. 2022
Invited Talk at the 88th meeting of Ecma TC39	Online
PRESENTER FOR <JAVASCRIPT STATIC ANALYSIS FOR EVOLVING LANGUAGE SPECIFICATIONS>	Jan. 2022

Seminar at The 24th Korea Conference On Software Engineering (KCSE 2022) PRESENTER FOR <JSTAR: JAVASCRIPT SPECIFICATION TYPE ANALYZER USING REFINEMENT>	Online Jan. 2022
Seminar at The 24th Korea Conference On Software Engineering (KCSE 2022) PRESENTER FOR <JEST: N+1-VERSION DIFFERENTIAL TESTING OF BOTH JAVASCRIPT ENGINES AND SPECIFICATION>	Online Jan. 2022
Invited Talk at Agoric PRESENTER FOR <JAVASCRIPT STATIC ANALYSIS FOR EVOLVING LANGUAGE SPECIFICATIONS>	Online Jan. 2022
Seminar at Korea Software Congress (KSC) 2021 PRESENTER FOR <JEST: N+1-VERSION DIFFERENTIAL TESTING OF BOTH JAVASCRIPT ENGINES AND SPECIFICATION>	Online Dec. 2021
Seminar at le Département d'Informatique de l'École Normale Supérieure (DIENS) PRESENTER FOR <JAVASCRIPT STATIC ANALYSIS FOR EVOLVING LANGUAGE SPECIFICATIONS>	Online Dec. 2021
The 36th IEEE/ACM International Conference on Automated Software Engineering (ASE 2021) PRESENTER FOR <JSTAR: JAVASCRIPT SPECIFICATION TYPE ANALYZER USING REFINEMENT>	Online Nov. 2021
Seminar at Electronic & Information Research Information Center (EIRIC) PRESENTER FOR <JEST: N+1-VERSION DIFFERENTIAL TESTING OF BOTH JAVASCRIPT ENGINES AND SPECIFICATION>	Online Oct. 2021
KAISTPL Workshop 2021 PRESENTER FOR <JAVASCRIPT STATIC ANALYSIS FOR EVOLVING LANGUAGE SPECIFICATIONS>	Online Sep. 2021
Doctoral Symposium Track of ECOOP/ISSTA 2021 PRESENTER FOR <JAVASCRIPT STATIC ANALYSIS WITH EVOLVING ENGINES AND SPECIFICATION>	Online Jul. 2021
Lab Seminar at KAIST Programming Systems Laboratory (Prosyls Lab) PRESENTER FOR <TOWARDS CO-EVOLUTION OF JAVASCRIPT SPECIFICATION AND TOOLS>	Daejeon, Republic of Korea Jun. 2021
Invite Talk at Korea Computer Congress (KCC) 2021 PRESENTER FOR <JISSET: JAVASCRIPT IR-BASED SEMANTICS EXTRACTION TOOLCHAIN>	Jeju, Republic of Korea Jun. 2021
The 43rd ACM/IEEE International Conference on Software Engineering (ICSE 2021) PRESENTER FOR <JEST: N+1-VERSION DIFFERENTIAL TESTING OF BOTH JAVASCRIPT ENGINES AND SPECIFICATION>	Online May 2021
The 35th IEEE/ACM International Conference on Automated Software Engineering (ASE 2020) PRESENTER FOR <JISSET: JAVASCRIPT IR-BASED SEMANTICS EXTRACTION TOOLCHAIN>	Online Sep. 2020
Invite Talk at National University of Singapore (NUS) PRESENTER FOR <UPDATE-TOLERANT JAVASCRIPT STATIC ANALYSIS FOR FREQUENTLY RELEASED ECMAScript>	Singapore Nov. 2019
Journal First Presentation at the 34th IEEE International Conference on Software Maintenance and Evolution (ICSME 2018 J1C2) PRESENTER FOR <TOWARDS ANALYSIS AND BUG FINDING OF JAVASCRIPT WEB APPLICATIONS IN THE WILD>	Cleveland, USA Sep. 2018
The 2nd International Workshop on Programming Technology for the Future Web (ProWeb 2018) PRESENTER FOR <A FRAMEWORK FOR DYNAMIC INTER-DEVICE TASK DISPATCH WITH EVENTUAL CONSISTENCY>	Nice, France Apr. 2018

The 6th ACM SIGPLAN International Workshop on the State Of the Art in Java Program Analysis (SOAP 2017)

Barcelona, Spain

PRESENTER FOR <REVISITING REGENCY ABSTRACTION FOR JAVASCRIPT: TOWARDS AN INTUITIVE, COMPOSITIONAL, AND EFFICIENT HEAP ABSTRACTION>

Jun. 2017

Demonstrations Trak of the 39th International Conference on Software Engineering (ICSE-C 2017)

Buenos Aires, Argentina

PRESENTER FOR <ANALYSIS OF JAVASCRIPT WEB APPLICATIONS USING SAFE 2.0.>

May 2017

Student Research Competition at the 13th International Conference on Modularity (Modularity 2014 SRC)

Lugano, Switzerland

PRESENTER FOR <JAVASCRIPT API MISUSE DETECTION BY USING TYPESCRIPT>

Apr. 2014

Software

ESMeta: ECMAScript Specification (ECMA-262) Metalanguage

PROGRAMMING LANGUAGE RESEARCH GROUP, KAIST

Jan. 2022 - PRESENT

- Main developer of ESMeta
- Developed in Scala
- URL: <https://github.com/es-meta/esmeta>

SAFE: Scalable Analysis Framework for ECMAScript

PROGRAMMING LANGUAGE RESEARCH GROUP, KAIST

Mar. 2016 - PRESENT

- Main developer of SAFE version 2.0
- Developed in Scala
- URL: <https://github.com/sukyoung/safe>

Activities

Program Committee (PC) Member

Lisbon, Portugal

ACM/IEEE INTERNATIONAL CONFERENCE ON SOFTWARE ENGINEERING (ICSE)

Apr. 2024

Extended Review and Artifact Evaluation Committee (ERC+AEC) Member

Lisbon, Portugal

ACM CONFERENCE ON OBJECT-ORIENTED PROGRAMMING, SYSTEMS, LANGUAGES, AND APPLICATIONS (OOPSLA)

Dec. 2023

Extended Review and Artifact Evaluation Committee (ERC+AEC) Member

Auckland, New Zealand

ACM CONFERENCE ON OBJECT-ORIENTED PROGRAMMING, SYSTEMS, LANGUAGES, AND APPLICATIONS (OOPSLA)

Dec. 2022

Program Committee (PC) Member

Auckland, New Zealand

THE 19TH ASIAN SYMPOSIUM ON PROGRAMMING LANGUAGES AND SYSTEMS (APLAS)

Dec. 2022

Web Co-Chair

Daejeon, South Korea

THE 31ST ACM SIGSOFT INTERNATIONAL SYMPOSIUM ON SOFTWARE TESTING AND ANALYSIS (ISSTA)

Jul. 2022

Artifact Evaluation Committee (AEC) Member

Louisiana, United States

THE 47TH ACM SIGPLAN SYMPOSIUM ON PRINCIPLES OF PROGRAMMING LANGUAGES (POPL)

Oct. 2019

Artifact Evaluation Committee (AEC) Member

Athens, Greece

ACM CONFERENCE ON OBJECT-ORIENTED PROGRAMMING, SYSTEMS, LANGUAGES, AND APPLICATIONS (OOPSLA)

Jul. 2019

Reviewer for C++ Code Reviewing Exams

Daejeon, S.Korea

SAMSUNG ELECTRONICS

Sep. 2015 - Feb. 2019

Journal First Presentation

IEEE INTERNATIONAL CONFERENCE ON SOFTWARE MAINTENANCE AND EVOLUTION (ICSME)

- Session: Program Analysis - II
- Title: Towards Analysis and Bug Finding of JavaScript Web Applications in the Wild

Madrid, Spain

Sep. 2018

Artifact Evaluation Committee (AEC) Member

ACM CONFERENCE ON OBJECT-ORIENTED PROGRAMMING, SYSTEMS, LANGUAGES, AND APPLICATIONS (OOPSLA)

Massachusetts, United States

Jul. 2018

Internship Program

ÉCOLE NORMALE SUPÉRIEURE

- Professor: Xavier Rival
- Subject: Allocation Call-site Abstraction with K-limiting Approach (k-ACS)

Paris, France

Jul. 2018

Artifact Evaluation Committee (AEC) Member

STATIC ANALYSIS SYMPOSIUM (SAS)

Freiburg im Breisgau, Germany

Jun. 2018

Artifact Evaluation Committee (AEC) Member

ACM SIGSOFT INTERNATIONAL SYMPOSIUM ON SOFTWARE TESTING AND ANALYSIS (ISSTA)

Amsterdam, Netherlands

May. 2018

Shonan Meeting

NATIONAL INSTITUTE OF INFORMATICS (NII)

- Topic: Memory Abstraction, Emerging Techniques and Applications
- Presentation: Revisiting Recency Abstraction for JavaScript: Towards an Intuitive, Compositional, and Efficient Heap Abstraction

Shonan, Japan

Sep. 2017

Exchange Student Program

INFORMATIQUE ET RÉSEAUX, INSTITUT NATIONAL DES SCIENCES APPLIQUÉES DE TOULOUSE

Toulouse, France

Feb. 2015 - Jun. 2015

Undergraduate Research Program for Fusion of Creatives

KOREA FOUNDATION FOR THE ADVANCEMENT OF SCIENCE AND CREATIVITY (KOFAC)

- Topic: Design of Flexible Tactile Display Creating Multiple Steps of Touch Feeling
- Advisor: Sukyoung Ryu

Daejeon, S.Korea

Jun. 2014 - Nov. 2014

Undergraduate Research Project (URP) Program

SCHOOL OF COMPUTING, KAIST

- Topic: JavaScript API Misuse Detection by Using TypeScript
- Advisor: Sukyoung Ryu

Daejeon, S.Korea

Dec. 2013 - Jun. 2014