

# Jinyung Kim

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## Research Interests

Static analysis techniques that help us to know better about programs without running them interest me in general. My main target has been Android applications. In particular, I am interested in improving analysis and utilizing its results, such as striking cost-accuracy balance or applying machine learning techniques.

## Education

Sep. 2010 - current, Ph.D. Student in Computer Science and Engineering, Seoul National University.

Mar. 2006 - Aug. 2010, B.S. in Computer Science and Engineering & Mathematical Science, Seoul National University (Double Major)

Mar. 2004 - Feb. 2006, Seoul Science High School (Early Graduation)

## Research Experiences

Seoul National University  
Ph.D. Student

Sep. 2010 - current  
Advisor: Prof. Kwangkeun Yi

### **ScanDal: Static Analyzer for Detecting Privacy Leaks in Android Applications**

I have been a main designer and developer of ScanDal<sup>1</sup>, an abstract interpreter for Android Applications. ScanDal takes Android application packages as input and detects dataflows from information sources to sinks in the whole program. Challenges I tackled to improve the performance of the analyzer with collaborators include handling virtual calls, listeners, reflections, string manipulations, and unknown API uses.

### **Android Malware Detection by Machine Learning with Semantic Features (work in progress)**

By the help of static analysis results of Android applications from ScanDal, I am working on applying machine learning classification to detect general Android malware. Our position is that using semantic features can help distinguishing unknown malware from benign applications. My main focus is identifying general semantic features that are prevalent in general malware, rather than describing specific malicious behaviors.

### **Interference Analysis of Two-Stage Language**

With collaborators, I designed a type-based interference effect analysis for two-staged language. The analysis detects non-interfering code, a subexpression whose evaluation does not contribute to the whole program result, in a multi-staged fashion. We proved the soundness of the analysis. We designed a type inference algorithm constructing effects and proved its correctness.

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<sup>1</sup><http://ropas.snu.ac.kr/scandal/>

## Publications

**Jinyung Kim**, Yongho Yoon, Kwangkeun Yi (SNU), Junbum Shin (Samsung Electronics). *ScanDal: Static Analyzer for Detecting Privacy Leaks in Android Applications*. Mobile Security Technologies (MoST) 2012 (part of the IEEE Computer Society Security and Privacy Workshops, in conjunction with the IEEE Symposium on Security and Privacy).

## Activities

### *Projects*

Jan. 2011 - Dec. 2011, Jul. 2012 - Jul. 2013 & Aug. 2013 - Jan. 2014, ScanDal/privacy: Detecting Privacy Leaks in Android Applications (with Samsung Electronics)

### *Teaching*

2013 Spring, Teaching Assistant, SNU 4541.664A Program Analysis: Theories and Practices

2012 Fall, Teaching Assistant, SNU 046.016 Computational Civilization

2011 Fall & 2011 Spring, Teaching Assistant, SNU 4190.310 Programming Languages

2010 Fall, Teaching Assistant, SNU 4190.210 Principles of Programming

### *Additional Reviewer*

SOAP 2015 & POPL 2013

### *Awards and Honors*

14th place, ACM International Collegiate Programming Contest World Finals (2010)

2nd place, ACM International Collegiate Programming Contest Seoul Regional (2008 & 2009)

Presidential Science Scholarship, Korea Science and Engineering Foundation (2006 - 2009)

## References

### **Kwangkeun Yi**

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