JOYDEEP MITRA

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1858 Claflin Road
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EDUCATION

PhD Kansas State University,
Computer Science, GPA 3.9 — Aug 2014 - current
Expected: August 2020

BS West Bengal University of Technology,
Information Technology — 2006-2010

HONORS AND AWARDS

Ann and Dave Braun Student Inventor Award, Kansas State University — 2019
Awarded to a student in the university annually for an innovation with commercial potential

Android Security Rewards, Google Inc. — 2018
Awarded for discovering two vulnerabilities affecting Android 7 thru Android 9 (CVE-2018-9548, CVE-2019-9463).

Kansas State Engineering Fellowship, Kansas State University — 2014-2016
Awarded to select incoming PhD students

EXPERIENCE

Research Assistant — 2016-2018

- Ghera – A repository of Android app vulnerability benchmarks: https://bitbucket.org/secure-it-i/android-app-vulnerability-benchmarks
- Rekha – An empirical evaluation of freely available security analysis tools in Android. https://bitbucket.org/secure-it-i/may2018/src

Google Summer of Code — Summer 2017
Intern, MIT Media Labs

- Co-designed and implemented CloudDB for developers of MIT App Inventor. https://github.com/JoyMitra/appinventor-sources/blob/joy_dev/My_GSOC_Contribution.mdSkill/Accomplishment/Project

Cognizant Technology Solutions, India — 2010 to 2014
Programmer Analyst

- Helped develop and maintain the payment management system for insurance companies like MetLife and John Hancock

TEACHING EXPERIENCE

Kansas State University, USA May 2014 to current

- Course Assisted:
  - Logical Foundations of Programming
  - Software Testing Techniques
  - Introduction to Software Security
  - Programming Languages Design & Implementation
- Responsibilities:
  - Help sessions to assist students with the material
  - Help designing course material
  - Grading and designing assignments and exams

PUBLICATIONS

Journal Publications

Venkatesh-Prasad Ranganath, and **Joydeep Mitra**, "Are Free Android App Security Analysis Tools Effective in Detecting Known Vulnerabilities?" *Empirical Software Engineering (EMSE), 2019. (Equal contribution)*

Conference & Workshop Papers

(Peer-Reviewed)

Joydeep Mitra and Venkatesh-Prasad Ranganath , "Ghera: A Repository of Android App Vulnerabilities". *International Conference on Predictive Models and Data Analytics in Software Engineering (PROMISE) 2017.*

Joydeep Mitra and Venkatesh-Prasad Ranganath, "BenchPress: Analyzing Android App Vulnerability Benchmark Suites". *International Workshop on Advances in Mobile App Analysis (A-Mobile), 2019.*

Joydeep Mitra and Venkatesh-Prasad Ranganath, "SeMA: A Design Methodology for Building Secure Android Apps". *International Workshop on Advances in Mobile App Analysis (A-Mobile), 2019.*

TALKS

Ghera: A Repository of Android App Vulnerabilities. *Midwest Verification Day (MVD), Manhattan, Kansas, 2017.*

Are Free Android App Security Analysis Tools Effective in Detecting Known Vulnerabilities? *International Conference on Automated Software Enginnering, San Diego, California, 2019.*

Analyzing Android App Vulnerability Benchmark Suites. *ASE Workshop on Advances in Mobile App Analysis, San Diego, California, 2019.*

A Design Methodology for Building Secure Android Apps. *ASE Workshop on Advances in Mobile App Analysis, San Diego, California, 2019.*

SOFTWARE BUILT

Ghera Repository of Android app vulnerability benchmarks.
Technologies: Android & Java
Impact: Ghera helped discover two vulnerabilities in the Android platform
Webpage: https://secure-it-i.bitbucket.io/ghera/index.html

Rekha Tool-set to automatically evaluate Android security analysis tools.
Technologies: Android, Java, Groovy
Impact: Used to evaluate 15 Android vulnerability detection tools
Webpage: https://secure-it-i.bitbucket.io/rekha/index.html

CloudDB Library to help MIT App Inventor developers store data on an Internet connected database server (using Redis software).
Technologies: Android, Java, Redis
Impact: Used by MIT App Inventor developers
Webpage: https://github.com/JoyMitra/appinventor-sources/tree/joy_dev

CoForm Tool to help experimental chemists predict co-crystals.
Technologies: Groovy, Unix
Impact: Ann and Dave Student Inventor Award for commercializing the tool.
Note: Protected by confidentiality agreement. Please email me for more information.

SoFAnalyzer Tool to identify security-related APIs used by Android app developers from discussions on Stack Overflow.
Technologies: Groovy, Unix, Android
Webpage: https://bitbucket.org/secure-it-i/stackoverflow-march2019/src/master/

BenchPress Tool-set to measure the representativeness of Android app security benchmark suites.
Technologies: Groovy, Unix, Android
Note: Please contact me for more information about the tool.

BSE app An Android app to aid veterinarians collect real-time data while examining bulls in the field.
Technologies: Android, Java
Webpage: http://santoslab.github.io/apps-4-vet-med/bse/

PATENTS

Sarkar, Mitra, Aakeröy, et al. CoForm: *An Automated Technique for Predicting Co-crystals*. Patent Application filed April 2019. Patent Pending.

STUDENT ADVISING

2017-2018 Aditya Narkar, Masters' student at Kansas State University.
Projects:
- *Testing the authenticity of Android app vulnerability benchmarks.*
- *Determining Android security-related APIs from Stack overflow discussions.*

Summer 2018 Catherine Mansfield, Undergraduate student at Kansas State University.
Project: *Detecting vulnerabilities in real-world Android apps.*

Spring 2019 Kayla Mesh, Undergraduate students at Kansas State University.
Project: *Verifying Cryptographic protocols using Maude-NPA.*

REFERENCES

Dr. Venkatesh-Prasad Ranganath
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Previously Asst. Professor, Kansas State University, USA.
venkateshprasad.ranganath@gmail.com

Dr. Christer Aakeröy
University Distinguished Professor, Kanas State University, USA.
aakeroy@ksu.edu

Dr. Torben Amtoft
Associate Professor, Kansas State University, USA.
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Dr. Robby
Professor, Kansas State University, USA.
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