JOYDEEP MITRA

Phone: (785) 770-6217
joydeep.mitra@stonybrook.edu

New Computer Science, Room 131
Engineering Dr, Stony Brook
New York, NY 11794

EDUCATION

PhD Kansas State University, Computer Science — Aug 2020
Dissertation: **A development methodology to help build secure mobile apps**
(https://krex.k-state.edu/dspace/handle/2097/40747)

BS West Bengal University of Technology, Information Technology — Jun 2010

HONORS AND AWARDS

Stony Brook Faculty Fellowship — 2023-2025
Awarded to faculty to develop innovative pedagogical methods

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

Assistant Teaching Professor, Northeastern University — 2023-Present

Assistant Professor of Practice, Stony Brook University — 2020-2023

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 App Inventor
- Helped design and implement CloudDB for developers of App Inventor. https://github.com/JoyMitra/appinventor-sources/blob/joy_dev/My_GSOC_Contribution.mdSkill/Accomplishment/Project

Cognizant Technology Solutions, India 2010 - 2014
Programmer Analyst
- Full Stack Development
- Helped develop and maintain the payment management system for insurance companies like MetLife and John Hancock

TEACHING EXPERIENCE

Stony Brook University 2020 - Present
- *Course Taught*:
  - Scripting Languages
  - System Fundamentals
  - Principles of Programming Languages
  - Fundamentals of Software Development
  - Introduction to Computer Security
- *Responsibilities*: design course materials and syllabus, teach lectures, grading and designing assignments and exams, manage teaching assistants

Kansas State University 2014 - 2020
- *Course Assisted*:
  - Logical Foundations of Programming
  - Software Testing Techniques with Python
  - Introduction to Software Security
  - Programming Languages Design & Implementation
- *Responsibilities*: help sessions to assist students with the material, assisted in designing new course material, grading and designing assignments and exams

PUBLICATIONS

Journal Publications

1. 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)*

2. Nandini Sarkar, **Joydeep Mitra**, Molly Vittengl, Lexi Brandt and Christer B. Aakeröy, "A user-friendly application for predicting the outcome of co-crystallizations". *CrystEngComm Journal, 2020*.

Conference & Workshop Papers
(Peer-Reviewed)

1. **Joydeep Mitra** "Studying the Impact of Auto-graders Providing Immediate Feedback in Programming Assignments". *Technical Symposium on Computer Science Education (SIGCSE), 2023.*
2. **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.*
3. **Joydeep Mitra** and Venkatesh-Prasad Ranganath, "BenchPress: Analyzing Android App Vulnerability Benchmark Suites". *International Workshop on Advances in Mobile App Analysis (A-Mobile), 2019.*
4. **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.*

arXiv preprints

1. **Joydeep Mitra** "Security & Privacy Analysis of US-based Contact Tracing Apps". *arXiv, 2022, arXiv preprint arXiv:2207.089782*
2. **Joydeep Mitra** and Venkatesh-Prasad Ranganath, "SeMA: Extending and Analyzing Storyboards to Develop Secure Android Apps" *arXiv, 2020, eprint 2001.10052*

TALKS

Studying the Impact of Auto-graders Providing Immediate Feedback in Programming Assignments, Technical Symposium on Computer Science Education, Toronto, 2023.

FOSSASIA Invited Talk on Securing Android Applications. Singapore, 2021.

Careers in Academia. *CSGSA Seminar at Kansas State University, Manhattan, Kansas, 2021*.

Using SeMA To Develop Secure Mobile Apps. *Languages Seminar at Stony Brook University, Stony Brook, New York, 2020*.

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.*

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

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, R, Unix, Python
Impact: Used to evaluate 15 Android vulnerability detection tools
Webpage: https://secure-it-i.bitbucket.io/rekha/index.html

SeMA A Design Methodology to build secure Android apps
Technologies: Android, Java, Groovy, Storyboards
Impact: Used to prevent 49 vulnerabilities known to plague Android aps
Webpage: https://bitbucket.org/secure-it-i/sema/src/master/

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, Cambridge Structural Database
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/

STUDENT ADVISING

2022-Present

May Me Maung, undergraduate at Stony Brook University
Eric Wang, undergraduate at Stony Brook University
Mahir Alam, undergraduate at Stony Brook University
Sai Chaddha, undergraduate at Stony Brook University
- ***Project: A Digital Archive of Historical Postcards***

Minato Fukuda, undergraduate at Stony Brook University
- ***Project: Security analysis of mobile banking apps.***

Saahil Kamat, graduate student at Stony Brook University
Harsh Vora, graduate student at Stony Brook University
- ***Project: Extending Flutter to Build Privacy-aware apps.***

Piyush Mittal, graduate student at Stony Brook University
Navneeth Umesh Holla, graduate student at Stony Brook University
- ***Project: A repository of iOS app vulnerabilities***.

2021-2022

Colin Ruan, undergraduate at Stony Brook University
Jeffrey Jiminez, undergraduate at Stony Brook University
Souroush Semarkant, undergraduate at Stony Brook University
Mihir Madhira, undergraduate student at Stony Brook University
Patrick Wszeborowski, undergraduate student at Stony Brook University
Minqi Shi, graduate Student at Stony Brook University
Taylor Giles, graduate Student at Stony Brook University
- ***Project: Analyzing COVID-19 Android apps for privacy violations***

2017-2018

Aditya Narkar, graduate 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.***

SERVICE

- Reviewer for Transactions of Software Engineering & Methodology (TOSEM) journal.
- Reviewer for SIGCSE 2021 and 2023, The Technical Symposium on Computer Science Education.
- Reviewer for Graduate Research Day at Stony Brook University 2021.
- Invited Talk on Careers in Computer Science, November 2021, Graduate Student Association, Kansas State University.
- Part of the committee on increasing diversity in Computer Science at Stony Brook University.

PROFESSIONAL DEVELOPMENT

- Professional Development Workshop for Teaching-Track Faculty (SIGCSE 2021)
- Essential Communication Skills Teaching (SUNY Professional Development)
- Designing Empirical Education Research Studies Workshop (DEERS 2021)
- Shutterstock Distinguished Lecture (DLS) series organized by the Department of Computer Science at Stony Brook University.
- Large Language Models and The End of Programming. (ACM 2023).