Ehsan Edalat

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RESEARCH INTERESTS

- Privacy
- Language-Based Security
- Formal Methods in Information Security
- Software Testing-White Box Testing (Symbolic & Concolic Approaches)
- Software Vulnerability Analysis and Detection

EDUCATION

- Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
  PhD., Computer Engineering, Software
  September 2018-Now
  GPA: 17.86/20
- Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
  M.Sc., Information Technology, Information Security
  September 2015 - January 2018
  GPA: 17.31 / 20
- Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
  B.Sc., Computer Engineering, Software
  September 2011 - September 2015
  GPA: 17.36 / 20
- Imam Khomeini High School, Estahban, Fars, Iran
  Diploma in Mathematics and Physics
  September 2007 - June 2011
  GPA: High School 19.18 / 20 , Pre-University 18.5/ 20

HONORS AND AWARDS

- Qualified to Direct Admission to graduate school (PhD) of Computer Engineering and IT Department, AUT, 2018.
- Awarded as the Outstanding Student and achieved 2st place among 2015-beginner graduate students in Information Security major, AUT, 2016 and 2017.
- Achieved 49rd place among all applicants for the M.Sc. University Entrance Nationwide Exam in Information Technology, Iran, 2015.
- Qualified to Direct Admission to graduate school (M.Sc.) of Computer Engineering and IT Department, AUT, 2014.
- Achieved top 2% place among all applicants for the University Entrance Nationwide Exam (Approximately 260000 applicants) in Math. and Eng., Iran, 2011.

RESEARCH EXPERIENCES

January 2015 – present
Data Security Lab

Concolic Execution for Detecting Injection Vulnerabilities in Mobile Apps - M.Sc. Project, *(November 2015 – January 2018)*
We present a method for detecting injection vulnerabilities in Android Apps with Concolic Execution and taint analysis. With static analysis, we extract desirable pathes for detection analysis. With idea of using Mock classes, we alleviate event-driven and path explosion challenges due to Android framework. For evaluation of our tool, we use 10 self designed and 140 F-Droid repository Apps. Overall result shows that 11 Apps are vulnerable to SQL injection.

Design and Implementation of Extensible Software in order to Retrieve Deleted Information from Smart Phones - B.Sc. Project, *(March 2015 - September 2015)*
In this work, we implement a tool for mobile forensics. With this tool, deleted information of sensetive mobile apps like SMS, Emails, Browser bookmarks, histories' etc are retrieved. Also the tool supports deleted photos and files on

internal storage. Main aproach of this work is 3 different methods of retrieving deleted records from SQLite.

TEACHING EXPERIENCES

- **Instructor**, Advanced Programming Lab *(Spring 2018)*
  Under supervision of Dr. Noor Hoseini, Dr. Nickabadi.
- **Instructor & Coordinator**, Computer Lab *(Fall 2017)*
  Under supervision of Dr.Bakhshi, Dr. Nickabadi, Dr.Nazerfard, Dr. Shiri, Dr. Sabaei.
- **Instructor**, Computer Lab *(Fall 2016)*
  Under supervision of Dr. Nickabadi.
- **Teaching Assistant,** Design and Principles of Databases *(Fall 2015,2016, Spring 2016)*
  Under supervision of Dr.AmirHaeiri, Dr. Momtazi.
- **Teaching Assistant,** Computer Networks I *(Spring 2017)*
  Under supervision of Dr.Sadeghiyan.
- **Teaching Assistant,** Design and Principles of Compilers *(Spring 2015)*
  Under supervision of Dr.Razazi.
- **Teaching Assistant,** Computer Networks II *(Spring 2015)*
  Under supervision of Dr.Sabaei.
- **Teaching Assistant,** Internet Engineering *(Fall 2014)*
  Under supervision of Dr.Bakhshi.
- **Teaching Assistant,** Advanced Programming *(Spring 2014)*
  Under supervision of Prof. Pourvatan.
- **Teaching Assistant,** Data Structures *(Fall 2013)*
  Under supervision of Dr.Dehghan.

PUBLICATIONS AND TECHNICAL REPORTS

- **E. Edalat**, B. Sadeghiyan,F. Gassemi "ConsiDroid: A concolic-based tool for detecting SQL injection vulnerability in Android apps", arXiv preprint arXiv:1811.10448, 2018.
- **E. Edalat**, M. Aghvamipanah, B. Sadeghiyan "*Guided Concolic Execution of Android Apps for Automatic Generation of Test Inputs*", ICEE, 2018. (In Persian)
- **E. Edalat**, B. Sadeghiyan "*Concolic Execution for Detecting SQL Injection Vulnerability in Android Apps*", CSICC, 2018.(In Persian)
- **E. Edalat**, "*Discovering Software Vulnerabilities by Concolic Execution*" - report for Seminar course, AUT, 2016. (In Persian)
- **E. Edalat**, S.M.M. Ahmadpanah, "*Formal Analysis of Kerberos v5*" – project report for Security Protocols course, AUT, 2016. (In Persian)
- **E. Edalat**, "*Design and Implementation of Extensible Software in order to Retrieve Deleted Information from Smart Phones*" - B.Sc. Thesis, AUT, 2015. (In Persian)

TALKS

- **E. Edalat**, S.A. Naseredini, A. Afyaniyan "*Arms Race in Cyber Security: Vulnerabilities in Operating Systems*" AUT CERT Talks (In Persian), Computer Engineering and IT Department, AUT, 2018.
- **E. Edalat**, S.A. Naseredini, A. Afyaniyan "*Arms Race in Cyber Security: Social Engineering and Steal Information*" AUT CERT Talks (In Persian), Computer Engineering and IT Department, AUT, 2018.
- **E. Edalat** "*Concolic Execution*" - GradTalk (In Persian), Computer Engineering and IT Department, AUT, 2017.
- **E. Edalat** "*Dynamic Information Flow Analysis*" - Oral presentation for seminar of Formal Models and Information Security course (In Persian), AUT, 2017.
- **E. Edalat** "*Discovering Software Vulnerabilities by Concolic Execution*"" - Oral presentation for Seminar course (In Persian), AUT, 2016.

WORK EXPERIENCES

- **Amirkabir University of Tech. CERT Lab. (A.P.A.),** *(December 2017 till now)*
  Software Ethical Hacker (PenTest Tools) and Software Engineer and Web Developer (PHP).
- **Idea Pardazan (6thsoloution),** *(Spring 2015)*
  Android Developer.
- **Rayan Pardazan Nikro Emertat (RAPNA),** *(Summer 2014)*
  Software Engineer and Web Developer (PHP server-side for an Android application) -

Summer Internship.

- **Amirkabir University of Tech. CERT Lab. (A.P.A.),** *(Summer 2013)*
  Mobile Forensics tool developer in C#.

TOP ACADEMIC COURSE PROJECTS

- **Software Systems Security,**
  Threat Modeling and Bug Filing of a File Integrity Checker
- **Network Security,**
  Security Mechanisms and Defense Techniques in different layers of Computer Networks
- **Database Security,**
  Security in Oracle including User Management, Roles, VPD and Auditing
- **Security Protocols,**
  Formal Analysis of Kerberos v5 Protocol with MaudePSL
- **Secure Computer Systems**,
  BufferOverFlow in SELinux and MSSQL Security Survey
- **Cryptology**,
  MARS Cryptosystem: 256-bit Expansion and, SERPENT Cryptosystem Linear and Differential Analysis.
- **Compiler Design,**
  Implementing a front-end compiler for a programming language using flex and bison. The project has been done using Java and C in two versions.
- **Programming Languages**,
  Developing an interpreter using ML language. The project has been done using lex, yacc, and other abilities of OCaml.

TECHNICAL SKILLS

- **Programming Languages:**
  Java, C#, C/C++, PHP, Mips, ML, OCaml, Shell Scripting.
- **Database Systems:**
  MySQL, MongoDB, MSSQL.
- **Operating System:**
  Windows, Linux (Ubuntu, Fedora and Kali).
- **Web Development:**
  HTML (XHTML and HTML 5), CSS, JavaScript, jQuery, PHP, XML, XSLT, J2EE, Yii.
- **Penetration Tools.**
- **Mobile Forensics Tools.**
- **Other:**
  MS Threat Modeling Tool, PREfast, MaudePSL, SELinux, UML, Flex and Bison, Boson NetSim, Cisco Packet Tracer, MS Project, VHDL, Verilog, Orcad Pspice, Proteus.

LANGUAGES

- **Persian (Farsi) :** Mother tongue (Native)
- **English :** Professional working proficiency

REFERENCES

- **Mehran S. Fallah, Associate Professor**
  Computer Engineering and IT Department, Amirkabir University of Technology
  Email: msfallah@aut.ac.ir
- **Babak Sadeghiyan, Associate Professor**
  Computer Engineering and IT Department, Amirkabir University of Technology
  Email: basadegh@aut.ac.ir
- **MohammadReza Razzazi, Professor**
  Computer Engineering and IT Department, Amirkabir University of Technology
  Email: razzazi@aut.ac.ir
- **Mehdi Dehghan TakhtFooladi, Professor**
  Computer Engineering and IT Department, Amirkabir University of Technology
  Email: dehghan@aut.ac.ir
- **Masoud Sabaei, Associate Professor**
  Computer Engineering and IT Department, Amirkabir University of Technology
  Email: sabaei@aut.ac.ir

- **Bahador Bakhshi, Assistant Professor**
  Computer Engineering and IT Department, Amirkabir University of Technology
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- **Ahmad NickAbadi, Assistant Professor**
  Computer Engineering and IT Department, Amirkabir University of Technology
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- **Salman Niksefat, Assistant Professor**
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- **Hossein Zeinali, Assistant Professor**
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- **Fatemeh Ghassemi Esfahani, Assistant Professor**
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