

MUATH ABDULLAH ALKHALAF

PERSONAL INFORMATION

- Nationality: Saudi Arabia
- Languages: Arabic, English, little German

EDUCATION

[2014 – Now] King Saud University Riyadh
Assistant Professor in Computer Science Dept.

[2008-2014] University of California at Santa Barbara
PhD in Computer Science

- Thesis Title: **Automatic Detection and Repair of Input Validation and Sanitization Bugs**
- Advisor: Prof. Tevfik Bultan.

[2006-2008] University of California at Santa Barbara
MS in Computer Science

- Project Title: **Automated web service testing using interface grammars**
- Advisor: Prof. Tevfik Bultan

[1999-2003] King Saud University Riyadh
Bachelor Degree in Computer and Information Sciences

- Graduated as the first of class with 4.81/5.0 GPA and first degree of honor.

PUBLICATIONS

- **Muath Alkhalaf**, Abdalbaki Aydin and Tevfik Bultan. "*Semantic Differential Repair for Input Validation and Sanitization.*" Proceedings of 2014 International Symposium on Software Testing and Analysis (ISSTA 2014), pages 225-236, San Jose, California, USA, July 21-25, 2014.
- Abdalbaki Aydin, **Muath Alkhalaf** and Tevfik Bultan. "*Automated Test Generation from Vulnerability Signatures.*" Proceedings of the 7th International Conference on Software Testing, Verification and Validation (ICST 2014), pages 193-202, Cleveland, Ohio, USA, March 31-April 4, 2014.
- Fang Yu, **Muath Alkhalaf**, Tevfik Bultan, Oscar H. Ibarra. "*Automata-Based Symbolic String Analysis for Vulnerability Detection.*" Formal Methods in System Design, volume 44, number 1, pages 44-70, 2014
- **Muath Alkhalaf**, Shauvik Roy Choudhary, Mattia Fazzini, Tevfik Bultan, Alessandro Orso and Christopher Kruegel. "*ViewPoints: Differential String Analysis for Discovering Client and Server-Side Input Validation Inconsistencies.*" Proceedings of the 2012 International

Symposium on Software Testing and Analysis (ISSTA 2012), pages 56-66, Minneapolis, USA, July 15-20, 2012.

- **Muath Alkhalaf**, Tevfik Bultan, and Jose L. Gallegos. "*Verifying Client-Side Input Validation Functions Using String Analysis*." Proceedings of the 34th International Conference on Software Engineering (ICSE 2012) pages 947-957, Zurich, Switzerland, June 2-9, 2012.
- Fang Yu, **Muath Alkhalaf** and Tevfik Bultan. "*Patching Vulnerabilities with Sanitization Synthesis*." Proceedings of the 33rd International Conference on Software Engineering (ICSE 2011), pages 251-260, Waikiki, Honolulu, Hawaii, USA, May 21-28, 2011.
- Fang Yu, **Muath Alkhalaf** and Tevfik Bultan. "*Stranger: An Automata-based String Analysis Tool for PHP*." Tool paper. Proceedings of the 16th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2010), LNCS 6015, pages 154-157, Paphos, Cyprus, March 20-28, 2010.
- Sylvain Halle, Tevfik Bultan, Graham Hughes, **Muath Alkhalaf** and Roger Villemaire. "*Runtime Verification of Web Service Interface Contracts*." IEEE Computer, volume 43, number 3, pages 59-66, March 2010.
- Sylvain Halle, Graham Hughes, Tevfik Bultan, and **Muath Alkhalaf**. "*Generating Interface Grammars from WSDL for Automated Verification of Web Services*." Proceedings of the 7th International Conference on Service Oriented Computing (ICSOC 2009), pp. 516-530, Stockholm, Sweden, November 24-27, 2009.
- Fang Yu, **Muath Alkhalaf** and Tevfik Bultan. "*Generating Vulnerability Signatures for String Manipulating Programs Using Automata-based Forward and Backward Symbolic Analyses*." Short paper. Proceedings of the 24th IEEE/ACM International Conference on Automated Software Engineering (ASE 2009), pp. 605-609, Auckland, New Zealand, November 16-20, 2009.
- Graham Hughes, Tevfik Bultan and **Muath Alkhalaf**. "*Client and Server Verification for Web Services Using Interface Grammars*." Proceedings of the Workshop on Testing, Analysis and Verification of Web Software (TAV-WEB 2008), pp. 40-46, Seattle, Washington, July 21, 2008.

ACADEMIC EXPERIENCE

- Member of Verification Lab at UCSB
- Presented the following paper at **ISSTA 2012 conference**:
 - **Muath Alkhalaf**, Shauvik Roy Choudhary, Mattia Fazzini, Tevfik Bultan, Alessandro Orso and Christopher Kruegel. "*ViewPoints: Differential String Analysis for Discovering Client and Server-Side Input Validation Inconsistencies*." Proceedings of the 2012 International Symposium on Software Testing and Analysis (ISSTA 2012), pages 56-66, Minneapolis, USA, July 15-20, 2012.
- Presented the following paper at **ICSE 2012 conference**:
 - **Muath Alkhalaf**, Tevfik Bultan, and Jose L. Gallegos. "*Verifying Client-Side Input Validation Functions Using String Analysis*" Proceedings of the 34th International Conference on Software Engineering (ICSE 2012) pages 947-957, Zurich, Switzerland, June 2-9, 2012.
- Presented the following paper at **TACAS 2010 conference**:

- Fang Yu, **Muath Alkhalaf** and Tevfik Bultan. "*Stranger: An Automata-based String Analysis Tool for PHP.*" Tool paper. Proceedings of the 16th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2010), LNCS 6015, pages 154-157, Paphos, Cyprus, March 20-28, 2010.
- Presented the following paper at **SoCal Programming Languages workshop 2013**:
 - **Muath Alkhalaf**, Abdalbaki Aydin and Tevfik Bultan. "*Differential Patching of Input Validation in Web Applications.*"
- Presented the following paper at **SoCal Programming Languages workshop 2011**:
 - **Muath Alkhalaf**, Tevfik Bultan, and Jose L. Gallegos. "*Verifying Client-Side Input Validation Functions Using String Analysis.*"
- Received an NSF travel grant to attend the **Summer Formal 2011: First Summer School on Formal Techniques**, a one-week summer school which was organized by SRI International.
- Member of **UCSB hackers team**.
- Teaching Assistant for summer, fall and spring semesters in 2005/2006 in Computer Science Department at King Saud University. I have tutored four courses:
 - Introduction to programming with C++.
 - Introduction to programming with Java.
 - Advanced programming with C++.
 - Computer Arabization.
- Participated in 2001 summer Linux Arabization Project held by King Abdulaziz City for Sciences and Technology and written a paper entitled "Linux Arabization".

VERIFICATION & SECURITY TOOLS

- Lead developer for **SemRep**, which is a semantic differential repair tool for input validation and sanitization code. The tool can be found at (<https://github.com/vlab-cs-ucsb/SemRep>).
- Lead developer for **Stranger**, which is an open source PHP analysis tool to detect web vulnerabilities in PHP web applications such as XSS and SQLI using symbolic string analysis. The tool can be found at (<http://www.cs.ucsb.edu/~vlab/stranger/>).
- Co-developer for **LibStranger**, which is an open source automata-based symbolic string analysis library. The library can be found at (<https://github.com/vlab-cs-ucsb/Stranger>).
- Co-developer for **Linux Alarm** which is a Linux personal firewall implemented as undergraduate graduation project. The project is available in Sourceforge under <http://sourceforge.net/projects/linuxalarm>.

PROFESSIONAL EXPERIENCE

[June 2003- June 2005] Al-Elm Information Security Company Riyadh
Information Security Engineer

- Worked at Al-Elm Company as a security engineer.
- Earned the SANS GIAC Security Essentials Certification GSEC. As part of the certification program, I have written a paper titled "*Introduction to Java Cryptography*" which was published on SANS' Information Security Reading Room, accessible through Internet at www.sans.org/rr/.

HONORS & AWARDS

- The Best student of King Saud University 2002/2003. This honor is given to students who can balance between their high academic achievements and their effective contributions to university activities.
- Won King Abdulaziz Saudi National Award for Scientific Creativity for my undergraduate graduation project "Linux Alarm" which is a Linux Personal Firewall.
- "Linux Alarm" was chosen among the best three graduation projects in the competition held at King Saud University, College of Computer and Information Sciences at year 2003.
- Won the best open source project for year 2004 from Saudi Linux Users Group for building "Linux Alarm".
- Represented College of Computer and Information Sciences in King Saud University Cultural Competition where we won the second place among colleges.
- Represented my Home City Al-Rass in the Saudi National Competition where we won the second place among Saudi's cities.