

# Abdulbaki Aydın

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## WORK EXPERIENCE

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- **Microsoft** **Redmond, WA**  
*Software Engineer* *2017–current*  
A member of Intelligent Security Graph team that focuses on cloud and enterprise security.
- **University of California Santa Barbara** **Santa Barbara, CA**  
*Research Assistant* *2012–2017*  
Worked on automatic discovery of software side channels as part of the project that is funded by The Space/Time Analysis for Cybersecurity (STAC)<sup>1</sup> program of DARPA. My research work spans topics such as model counting, constraint solving, symbolic execution, program analysis, vulnerability analysis, automated code repair, and automated testing.
- **SecureDocs Inc.** **Santa Barbara, CA**  
*Software Consultant* *2014–2015*  
Added new features to SecureDocs (online secure virtual data room software) and ContractWorks (online secure contract management software) that improved user experiences. Used BackboneJS and Ruby on Rails. Experience in continuous integration and cloud based scalable web application development.
- **IBM T.J. Watson Research Center** **Yorktown Heights, NY**  
*Research Intern* *June 2014–September 2014*  
My research aims to define and implement a user-friendly fine-grained permission control systems for mobile platforms. Aligned with my research, I developed a tool that is able to identify privacy sensitive data usages on real world applications and it provides a user interface to visually configure privacy sensitive data usage.
- **Appfolio Inc.** **Santa Barbara, CA**  
*Software Engineering Intern* *June 2013–September 2013*  
Developed new front-end and back-end components to SecureDocs in parallel to customer needs. Used BackboneJS and Ruby on Rails. Experience in continuous integration and cloud based scalable web application development.
- **University of California Santa Barbara** **Santa Barbara, CA**  
*Teaching Assistant* *2011–2012*  
Teaching assistant for Data Structures and Algorithms, Translation of Programming Languages (received **Outstanding TA Award**), and Introduction to Cryptography.
- **Hewlett Packard** **Istanbul, Turkey/Porto Alegre, Brazil**  
*Software Developer* *2009–2011*  
A member of Hewlett Packard-Istanbul Technical University Software Innovation Center in Istanbul, Turkey. Worked on research and development of a high scale project that spans teams from USA, Brazil, and Turkey. Used ActionScript, PHP, C#, Java, XSLT.

## EDUCATION

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- **University of California Santa Barbara** **Santa Barbara, CA**  
*Ph.D. Candidate in Computer Science, GPA: 3.87/4.00* *2011–2017*  
Thesis Title: "Automata-based Model Counting String Constraint Solver for Vulnerability Analysis".
- **Fatih University** **Istanbul, Turkey**  
*B.S. in Computer Engineering, GPA: 3.97/4.00* *2004–2009*
- **Fatih University** **Istanbul, Turkey**  
*B.S. in Electric-Electronics Engineering, Double Major* *2006–2009*

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<sup>1</sup><http://www.darpa.mil/program/space-time-analysis-for-cybersecurity>

## TOOLS

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- **ABC**: <https://github.com/vlab-cs-ucsb/ABC>  
Automata-Based model Counter is the only model counter that supports string theory and linear integer arithmetic theory simultaneously. It has many applications, including but not limited to, probabilistic symbolic execution, quantitative flow analysis, test case generation, automated repair, vulnerability analysis.
- **PAC**: <https://vlab.cs.ucsb.edu/PAC>  
PAtH complexity analyzer provides a new complexity measurement method to assess how hard to achieve path coverage in a given method.
- **SemRep**: <https://github.com/vlab-cs-ucsb/SemRep>  
Semantic differential code Repair is an automated differential code repair tool for input validation and sanitization code. Given a reference and a target function, it aims to provide a stronger validation and sanitization code than the reference and the target functions.

## BOOKS

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- **Springer 2017**: String Analysis for Software Verification and Security. Tevfik Bultan, Fang Yu, Muath Alkhalaf, Abdalbaki Aydin.

## PUBLICATIONS

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- **ESEC/FSE 2018**: Parameterized Model Counting for String and Numeric Constraints. Abdalbaki Aydin, William Eiers, Lucas Bang, Tegan Brennan, Miroslav Gavrilo, Tevfik Bultan, Fang Yu.
- **ESEC/FSE 2017**: Constraint Normalization for Symbolic and Quantitative Program Analysis. Tegan Brennan, Nestan Tsiskaridze, Nicolás Rosner, Abdalbaki Aydin, Tevfik Bultan.
- **FASE 2017**: Visual Configuration of Mobile Privacy Policies. Abdalbaki Aydin, David Piorkowski, Omer Tripp, Pietro Ferrara, Marco Pistoia.
- **FSE 2016**: String Analysis for Side Channels with Segmented Oracles. Lucas Bang, Abdalbaki Aydin, Quoc-Sang Phan, Corina S. Pășăreanu, Tevfik Bultan.
- **CAV 2015**: Automata-based Model Counting for String Constraints. Abdalbaki Aydin, Lucas Bang, Tevfik Bultan.
- **ESEC/FSE 2015**: Automatically Computing Path Complexity of Programs. Lucas Bang, Abdalbaki Aydin, Tevfik Bultan. **Artifact evaluated.**
- **ISSTA 2014**: Semantic Differential Repair for Input Validation and Sanitization. Muath Alkhalaf, Abdalbaki Aydin, Tevfik Bultan. **Artifact evaluated.**
- **ICST 2014**: Automated Test Generation from Vulnerability Signatures. Abdalbaki Aydin, Muath Alkhalaf, Tevfik Bultan.

## TUTORIALS

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- **PLDI 2016**: String Analysis for Vulnerability Detection and Repair. Tevfik Bultan, Abdalbaki Aydin, Lucas Bang.

## WORKSHOPS

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- **GSWC 2014**: Automated Test Generation from Vulnerability Signatures. Abdalbaki Aydin, Muath Alkhalaf, Tevfik Bultan. **Best paper award receiver.**

## HONORS-AWARDS

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- **Best Paper Award**, Graduate Student Workshop on Computing 2014
- **Outstanding Teaching Assistant**, Computer Science Department at UCSB 2012

- **High Honor**, Fatih University *2004–2009*
- **Ranked as first Double Major Graduate**, Fatih University *2009*
- **Ranked in top 100** among 1.5 million students in National University Entrance Exam, Turkey *2006*
- **Ranked as 253rd** among 1.5 million students in National University Entrance Exam, Turkey *2004*

## SKILLS

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- **Programming Skills:** C, C++, Java, JavaScript (BackboneJS), Python, Ruby (Rails), PHP, Android.
- **Language Skills:** English (advanced), Turkish (mother tongue).
- **Personal Skills:** Self-motivated and have self learning skills. Ability to work in a fast paced environment. Passion to continuously learn and improve.
- **Interests:** Playing soccer, surfing, traveling