

Heidy A. Khlaaf

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- EDUCATION**
- University College London** **Sept 2013 - January 2018**
PhD: Computer Science
Advisors: Nir Piterman
Topic(s): Formal Verification, Temporal Logic,
and Model Checking of Infinite-State Systems
- Florida State University** **Dec 2012**
Bachelor of Science: Computer Science, Philosophy
Minor: Mathematics
Summa cum laude, Phi Beta Kappa; **3.9 GPA**
Honors Thesis Title:
“Temporal Property Verification”
- CONSULTANCY & RESEARCH**
- Adelard LLP** **London, UK June 2017 - Present**
Consultant
- Consultancy, research and training in safety and security related systems and their production; and production of standards and guidelines for safety and security related applications and their development.
 - Evaluating, designing, specifying, and verifying safety related systems and dependable computing applications using various techniques including: formal methods, model checking, static analysis as well as statistical analysis of field data and a variety of testing techniques.
 - Carrying out safety and security assessments that contribute to the assurance of clients’ projects by assisting with hazard analysis, providing independent advice, and reviewing their safety and security cases.
- Amazon Web Services** **New York, NY June 2015 - Sep 2015**
Security Research Scientist Intern
- Analyzed the application of static analysis methods to resolve a wide variety of SSL certification validation bugs which are pervasive in Amazon’s EC2 Java client library, Elastic Load Balancing API Tools, and Amazon Flexible Payments SDK.
- Microsoft Research** **Cambridge, UK Oct 2013 - May 2014**
Contractor
- Conducted further research and development to extend the functionality and applicability of the Temporal Logic Verifier **T2** to incorporate strictly more expressive logics such as Fair-CTL and CTL*.
- Microsoft Research** **Cambridge, UK Jan 2013 - April 2013**
Programming Languages Research Intern
- Discovered how procedure summarization, precondition synthesis, and traditional bottom up approaches complement each other to improve the performance and applicability of novel Computation Tree Logic verification tools.
- Microsoft Research** **Cambridge, UK May 2012 - Aug 2012**

Programming Languages Research Intern

- Encoded temporal property verification as program analysis task. Produced an encoding which, with the use of recursion and nondeterminism, enables off-the-shelf program analysis tools to naturally perform the reasoning necessary for proving temporal properties in T2.

Florida State University

Tallahassee, FL Sep 2010-Aug 2012

Research Assistant

- Assisted in the exploitation of parallelism found within functional programming in order to construct an intrinsically parallel language which exhibits intuitive parallel syntax.
- Created a statically-typed functional language that integrates seamlessly with C/C++. The language will have a functional declarative style, will be highly efficient to translate and execute, provides explicit and implicit parallel constructs, list comprehensions, and pattern matching.

Tufts University

Medford, MA June 2010-Aug 2010

Computer Science Research Intern

Participant of the Computer Research Association - DREU for Undergraduates

- Constructed a system that crawls the web in order to find participants who are involved in computer science or engineering academia.
- Utilized machine learning algorithms for automatic text-based classification in attempt to identify females among an uneven gender distribution of computer scientists.

PUBLICATIONS Refereed Publications

“The Past, Present, and Future(s): Verifying Temporal Software Properties”

H. Khlaaf. *University College London, Department of Computer Science*, PhD Dissertation, April 2018, London, UK.

“Verifying Increasingly Expressive Temporal Logics for Infinite-State Systems”

H. Khlaaf with B. Cook and N. Piterman. *Journal of ACM*, 64, 2, Article 15 (May 2017), 39 pages.

“T2: Temporal Property Verification”

M. Brockschmidt and H. Khlaaf with B. Cook and N. Piterman. *Tools and Algorithms for the Construction and Analysis of Systems*, Eindhoven, Netherlands, 2016.

“On Automation of CTL* Verification for Infinite-State Systems”

H. Khlaaf with B. Cook and N. Piterman. *Computer Aided Verification*, San Francisco, USA, 2015.

“Fairness for Infinite-State Systems”

H. Khlaaf with B. Cook and N. Piterman. *Tools and Algorithms for the Construction and Analysis of Systems*, London, UK, 2015.

“Faster Temporal Reasoning for Infinite-State Programs”

H. Khlaaf with B. Cook and N. Piterman. *Formal Methods in Computer-Aided Design*, Lausanne, Switzerland, 2014.

Refereed Workshops

“Abstract: Fairness for Infinite-State Systems”

H. Khlaaf with B. Cook and N. Piterman. *14th International Workshop on Termination*, Vienna, Austria, 2014.

Media

“Cultural Ramifications of Technical Interviews.”

H. Khlaaf. *Model View Culture*, Issue 23, June 2015.

TEACHING

University College London **London, UK September 2016-Present**

Teaching Assistant

- *COMP204P: Systems Engineering I* Fall 2016
- *COMP205P: Systems Engineering II* Spring 2017

Florida State University **Tallahassee, FL August 2011-Dec 2012**

Teaching Assistant (20 hours/week)

- *Instructed recitation sessions, assessed assignments, projects, exams, and held daily office hours to assist students.*

COP4342 Unix Tools Fall 2012

COP3330 Object Oriented Programming Spring 2012

COP3330 Object Oriented Programming Fall 2011

COP3353 Introduction to Unix Fall 2011

TALKS

Technical

- *F# eXchange* *April 2018 London, UK*
Invited Speaker: “Lessons from F#: From Academic Prototypes to Safety-Critical Systems”
- *Github Constellation* *March 2018 London, UK*
Invited Speaker: “Determining Software Safety in Critical Systems”
- *Tech Night LDN* *March 2018 London, UK*
Invited Panel Speaker: “Diversity in Technology”
- *Queen Mary University* *March 2017 London, UK*
Invited Speaker: “Verifying Increasingly Expressive Temporal Logics for Infinite-State Systems”
- *University of Kent* *Dec 2016 Canterbury, UK*
Invited Speaker: “Verifying Increasingly Expressive Temporal Logics for Infinite-State Systems”
- *TACAS* *April 2016 Eindhoven, Netherlands*
Speaker: “T2: Temporal Property Verification”
- *Computer Aided Verification* *July 2015 San Francisco, USA*
Speaker: “On Automation of CTL* Verification for Infinite-State Systems”
- *TACAS* *April 2015 London, UK*
Speaker: “Fairness for Infinite-State Systems”
- *University of Leicester* *March 2015 Leicester, UK*
Invited Speaker: “Verifying Fairness for Infinite-State Systems”
- *Formal Methods in Computer-Aided Design* *Oct 2014 Lausanne, Switzerland*
Speaker: “Faster Temporal Reasoning for Infinite-State Systems”

- *14th International Workshop on Termination* July 2014 Vienna, Austria
Speaker: "Fairness for Infinite-State Systems"
- *F#unctional Londoners* March 2013 London, UK
Invited Speaker: "T2: A Temporal Property Verifier in F#"

Non-Technical

- *Microsoft Research* Dec 2012 Cambridge, UK
Keynote Speaker at Think Computer Science 2012
- *Long Road Sixth Form College* July 2012 Cambridge, UK
Invited Guest Speaker

COMMUNITY

Program Committee

<i>Principles of Programming Languages AE</i>	October 2016
<i>Computer-Aided Verification AE</i>	May 2016
<i>Tiny Transactions on Computer Science (V. IV)</i>	Jan 2016
<i>Tiny Transactions on Computer Science (V. II)</i>	March 2013

Sub-Review Committee

<i>Tools and Algorithms for the Construction and Analysis of Systems</i>	Nov 2015
<i>International Conference on Computer-Aided Verification</i>	March 2015
<i>International Conference on Computer-Aided Verification</i>	February 2014
<i>International Conference on Computer-Aided Verification</i>	February 2013
<i>Formal Methods in Computer-Aided Design</i>	July 2012

Program Chair

<i>Tiny Transactions on Computer Science (V. III)</i>	May 2014 - May 2015
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Activities & Services

<i>UCL - Athena Swan PhD Student Representative</i>	2016-2017
<i>UCL - PPLV PhD Student Representative</i>	2015-2017
<i>UCL - PhD Student Representative</i>	2013-2015
<i>Upsilon Pi Epsilon - Florida State University Chapter President</i>	2012
<i>ACM - Florida State University Chapter Undergraduate Vice President</i>	2012
<i>ACM - Florida State University Chapter Historian</i>	2011
<i>ACM - Florida State University Chapter Graphic Designer</i>	2010

Professional Memberships

Association for Computing Machinery
ACM SIGPLAN
Phi Beta Kappa

AWARDS AND HONORS

<i>University College London - Research Excellence Studentship</i>	Sept 2013
<i>National Science Foundation - Graduate Research Fellowship</i>	Sept 2013
<i>Summer School of Marktoberdorf - Attendee</i>	Aug 2013
<i>CRA-W/CDC/SIGPLAN Mentoring Workshop at POPL Scholarship</i>	Jan 2013
<i>Departmental Travel Grant - Grace Hopper Celebration</i>	Oct 2012
<i>CRA-W/CDC/SIGPLAN Mentoring Workshop at POPL Scholarship</i>	Jan 2012
<i>Fall 2011 Bess Ward Honors Thesis Award</i>	Fall 2011
<i>Departmental Travel Grant - Grace Hopper Celebration</i>	Nov 2011
<i>Florida State University President's List</i>	2010 - 2012
<i>Florida Medallion Scholar</i>	2008 - 2012
<i>Florida State University Dean's List</i>	2008 - 2012

R M Beall Sr Charitable Foundation recipient
National SMART Grant recipient

2008 - 2012
2008 - 2011

SKILLS

*Languages & Software: C++, C, F#, Perl, LLVM IR, Haskell, Prolog, Scheme,
C#, Java, PHP, ASP, Javascript, Bash Script.*

Operating Systems: Adept in Windows, Unix, Linux, and Mac OS.

Other: Fluency in the Arabic Language