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**

- *Papers We Love @ StrangeLoop*   *Sep 2018 St. Louis, Missouri*
  Invited Speaker: "Standards We Love"

- *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"

- *University of East London*   *Nov 2017 London, UK*
  Invited Speaker: "Verification of Software Systems, Smart Sensors and the Nuclear Industry"

- *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

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

Sub-Review Committee

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

Program Chair

Tiny Transactions on Computer Science (V. III)	*May 2014 - May 2015*

Activities & Services

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

Professional Memberships

Association for Computing Machinery
ACM SIGPLAN
Phi Beta Kappa

AWARDS AND HONORS

International Conference on CAV - Best Paper Award	*July 2015*
University College London - Research Excellence Studentship	*Sept 2013*
National Science Foundation - Graduate Research Fellowship	*Sept 2013*
Summer School of Marktoberdorf - Attendee	*Aug 2013*
CRA-W/CDC/SIGPLAN Mentoring Workshop at POPL Scholarship	*Jan 2013*
Departmental Travel Grant - Grace Hopper Celebration	*Oct 2012*

CRA-W/CDC/SIGPLAN Mentoring Workshop at POPL Scholarship	*Jan 2012*
Fall 2011 Bess Ward Honors Thesis Award	*Fall 2011*
Departmental Travel Grant - Grace Hopper Celebration	*Nov 2011*
Florida State University President's List	*2010 - 2012*
Florida Medallion Scholar	*2008 - 2012*
Florida State University Dean's List	*2008 - 2012*
R M Beall Sr Charitable Foundation recipient	*2008 - 2012*
National SMART Grant recipient	*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