Karim Ali

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Academic Employment

Oct 2014–present	**Postdoctoral Researcher**, Technische Universität Darmstadt, Germany.
Host	Eric Bodden

Education

2014	**Ph.D.**, *Computer Science*, University of Waterloo, Canada.
Advisor	Ondřej Lhoták
Thesis	The Separate Compilation Assumption
Committee	Jan Vitek, Frank Tip, Reid Holmes, and Werner Dietl
2010	**MMath**, *Computer Science*, University of Waterloo, Canada.
Advisor	Raouf Boutaba
Thesis	Algorizmi - A Configurable Virtual Testbed to Generate Datasets for Offline Evaluation of Intrustion Detection Systems
Reviewers	Ian MacKillop and Urs Hengartner
2007	**B.Sc.**, *Computer Science*, The American University in Cairo, Egypt.
Advisors	Sherif G. Aly and Sherif El-Kassas
Thesis	A Jabber Framework for Building Communication Capable Java Mobile Applications
Minor	Mathematics

Research Experience

2014–present	**Postdoctoral Researcher**, *Secure Software Engineering (SSE) group*, Technische Universität Darmstadt, Germany.
	o Designing novel static analyses to detect misuses of cryptographic APIs in software systems.
	o Developing ranking metrics for the results of static analyses to improve developers' productivity.
2010–2014	**Research Assistant**, *Programming Languages Group (PLG)*, University of Waterloo, Canada.
	o Conducted research for constructing partial static call graphs for Java programs.
	o Developed various call graph construction algorithms for Scala.
	o Studied static analysis techniques for various JVM-hosted languages.
2008–2009	**Research Assistant**, *Secutiry Research Group*, University of Waterloo, Canada.
	o Worked on various models of Intrusion Detection Systems: e.g., peer-to-peer, kernel methods.
	o Developed Algorizmi, an open-source evaluation system for Intrusion Detection Systems.
2007	**Researcher**, *Department of Computer Science*, The American University in Cairo, Egypt.
	o Studied new techniques to support location management in Java-based pervasive systems.

Publications

Refereed Journal Publications (1 total)

IJCSNS '08   Sherif G Aly, Sarah Nadi, and **Karim Hamdan**. "A Java-Based Programming Language Support of Location Management in Pervasive Systems". In: *International Journal of Computer Science and Network Security* 8.6 (2008), pp. 329–336.

Refereed Conference Publications (3 total)

ECOOP '14   **Karim Ali**, Marianna Rapoport, Ondřej Lhoták, Julian Dolby, and Frank Tip. "Constructing Call Graphs of Scala Programs". In: *Proceedings of the 28th European Conference on Object-Oriented Programming*. ECOOP '14. Uppsala, Sweden, 2014, (Acceptance Rate: 26%).

ECOOP '13   **Karim Ali** and Ondřej Lhoták. "Averroes: Whole-Program Analysis without the Whole Program". In: *Proceedings of the 27th European Conference on Object-Oriented Programming*. ECOOP '13. Montpellier, France, 2013, (Acceptance Rate: 25%).

ECOOP '12   **Karim Ali** and Ondřej Lhoták. "Application-Only Call Graph Construction". In: *Proceedings of the 26th European Conference on Object-Oriented Programming*. ECOOP '12. Bejing, China, 2012, (Acceptance Rate: 19%).

Validated Artifacts (2 total, 1 distinguished artifact)

ECOOP '14
Distinguished Artifact   **Karim Ali**, Marianna Rapoport, Ondřej Lhoták, Julian Dolby, and Frank Tip. "Constructing Call Graphs of Scala Programs". In: *Proceedings of the 28th European Conference on Object-Oriented Programming*. ECOOP '14. Springer, 2014.

ECOOP '13   **Karim Ali** and Ondřej Lhoták. "Averroes: Whole-Program Analysis without the Whole Program". In: *Proceedings of the 28th European Conference on Object-Oriented Programming*. ECOOP '13. Springer, 2013.

Other Refereed Publications (2 total)

GIIS '09   **Karim Ali**, Issam Aib, and Raouf Boutaba. "P2P-AIS: A P2P Artificial Immune Systems architecture for detecting DDoS flooding attacks". In: *Global Information Infrastructure Symposium*. GIIS '09. Hammamet, Tunisia, 2009.

GIIS '09   **Karim Ali** and Raouf Boutaba. "Applying Kernel Methods to Anomaly-based Intrusion Detection Systems". In: *Global Information Infrastructure Symposium*. GIIS '09. Hammamet, Tunisia, 2009.

Research Demonstrations

ECOOP '13   **Karim Ali**. *Averroes: Whole-Program Analysis without the Whole Program*. Montpellier, France, 2013.

Posters

Cheriton '13   **Karim Ali**. *Averroes: Whole-Program Analysis without the Whole Program*. University of Waterloo, Canada, 2013.

Industrial Employment

2007   **Software Engineer**, *Execution Team*, ITWorx, Egypt.
- Redesigned the graphical user interface of the stock brokerage system for Execution Ltd.
- Improved user experience by redesigning major system components.
- Enhanced code readability by reviewing the previously written code.
- Used .Net framework, C#, CRM technologies during development.

Teaching and Advising

Substitute Lecturer

Winter 2014   **Technische Universität Darmstadt**, Designing Code Analyses for Large Software Systems.

Spring 2013	**University of Waterloo**, *CS241*, Foundations of Sequential Programs.

Graduate Teaching Assistant

2011–2013	**University of Waterloo**, *CS241*, Foundations of Sequential Programs.
2011–2013	**University of Waterloo**, *CS444/644*, Compiler Construction.
Spring 2011	**University of Waterloo**, *CS456/656*, Software Design and Architectures.
2008–2010	**University of Waterloo**, *CS456/656*, Computer Networks.
Winter 2008	**University of Waterloo**, *CS125*, Introduction to Programming Principles.
Fall 2007	**The American University in Cairo**, *CS448*, Security Engineering.

Undergraduate Teaching Assistant

Spring 2007	**The American University in Cairo**, *CS448*, Security Engineering.
2005–2006	**The American University in Cairo**, *CS330*, Computer Architecture.
2004–2005	**The American University in Cairo**, *CS106*, Fundamentals of Computer Science.

Current Students

2015-present	**Technische Universität Darmstadt**, *Lisa Nguyen*, Ph.D., CS, expected 2019.
2015-present	**Technische Universität Darmstadt**, *Stefan Krüger*, Ph.D., CS, expected 2019.
2015-present	**Technische Universität Darmstadt**, *Stefan Triller*, Ph.D., CS, expected 2018.
2015-present	**Technische Universität Darmstadt**, *Johannes Späth*, Ph.D., CS, expected 2017.

Professional Services

SCP '15	**Reviewer**, *Science of Computer Programming*.
PLDI AEC '15	**Program Committee Member**, *Artifact Evaluation Committee*, the 36th ACM SIGPLAN conference on Programming Language Design and Implementation.
WoW '15	**Workshop Co-organizer**, *Workshop on Wala*, co-located with the 36th ACM SIGPLAN conference on Programming Language Design and Implementation, PLDI '15.
ECOOP AEC '15	**Program Committee Member**, *Artifact Evaluation Committee*, the 29th European Conference on Object-Oriented Programming.
ECOOP AEC '14	**Program Committee Member**, *Artifact Evaluation Committee*, the 28th European Conference on Object-Oriented Programming.
TSE '13	**Reviewer**, *Transactions on Software Engineering*.

Awards and Honors

2014	**Distinguished Artifact Award**, *European Conference on Object-Oriented Programming*.
2012-2014	**David R. Cheriton Scholarship**, *University of Waterloo, Canada*, $20,000.
2012	**University of Waterloo Special Graduate Scholarship**, *Canada*, $2,500.
2012	**Queen Elizabeth II Graduate Scholarship in Science and Technology**, *Canada*, $5,000.
2011	**University of Waterloo Special Graduate Scholarship**, *Canada*, $1,000.
2008	**University of Waterloo Graduate Entrance Scholarship**, *Canada*, $3,000.
2007	**B.Sc. Summa Cum Laude Honors**, *The American University in Cairo*, Egypt.
2007	**Best CS Group Graduation Project Award**, *The American University in Cairo*, Egypt.
2003-2007	**Shell Endowed Scholarship**, *The American University in Cairo*, Egypt, 30% off.

Leadership and Volunteer Work

Fall 2013	**Graduate Student Ambassador**, *David R. Cheriton School of Computer Science*, University of Waterloo, Canada.
Winter 2012	**Tour Guide**, *Computer Science Open House*, University of Waterloo, Canada.
2010–2011	**President**, *Egyptian Students Association*, University of Waterloo, Canada.
Spring 2007	**Ushers Committee Leader**, *Honors Assembly*, The American University in Cairo, Egypt.
Spring 2007	**Academic Committee Head**, *Association for Computer Machinery (ACM)*, The American University in Cairo, Egypt.

Software

scalacg	A Scala compiler plugin for call graph construction. `http://github.com/olhotak/scalacg`
averroes	A tool that enables any Java analysis framework to analyze partial programs. `http://plg.uwaterloo.ca/~karim/projects/averroes/`
cgc	Datalog implementation of the *separate compilation assumption*. `http://plg.uwaterloo.ca/~karim/projects/cgc/`
algorizmi	An open-source cloud-based testbed for evaluating Intrusion Detection Systems. `http://sourceforge.net/projects/algorizmi/`
beep	An open-source implementation of the Jabber protocol for the Java mobile platform. `http://sourceforge.net/projects/beep/`

Languages

Arabic	**Mother Tongue**	
English	**Fluent**	
French	**Novice**	*basic words and phrases*
German	**Novice**	*currently taking courses*

Residency Status

Canada	**Permanent Resident**
Germany	**Work Visa**
Egypt	**Citizen**

References

Ondřej Lhoták, *Ph.D.*, (Ph.D. Advisor).
Associate Professor
David R. Cheriton School of Computer Science, University of Waterloo
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