Ahmed El-Hassany

Curriculum Vitae

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Research Interests

Networks, Software-Defined Networks, Networks Programmability, Systems, Distributed Systems, High Performance Computing.

Education

2015–present **PhD student**, *ETH Zürich*, Switzerland.
Advised by: Prof. Laurent Vanbever

2009–2011 **M.S. Computer Science**, *University of Delaware*, Newark, DE.

2003–2008 **B.Sc. Computer Engineering**, *Islamic University of Gaza*, Gaza, Palestine.

Awards

- Fulbright Foreign Student Scholarship for Master's program, 2009-2011.
- 2nd place winner team at IEEE/ACM Supercomputer Conference 2009 High Performance Computing Contest.
- Google Summer of Code, 2008.
- Palestinian Prime Minister's special award for undergraduate achievements, 2008

Publications

Conferences

[1] **A. El-Hassany**, J. Miserez, P. Bielik, M. Vechev, and L. Vanbever, "SDNRacer: Concurrency Analysis for Software-Defined Networks," in *PLDI 2016*.

[2] E. Z. Yang, G. Campagna, O. S. Ağacan, **A. El-Hassany**, A. Kulkarni, and R. R. Newton, "Efficient Communication and Collection with Compact Normal Forms," in *ICFP 2015*.

[3] J. Miserez, P. Bielik, **A. El-Hassany**, L. Vanbever, and M. Vechev, "SDNRacer: Detecting Concurrency Violations in Software-defined Networks," in *SOSR 2015*.

[4] C. Scott, A. Wundsam, B. Raghavan, A. Panda, A. Or, J. Lai, E. Huang, Z. Liu, **A. El-Hassany**, S. Whitlock, H. Acharya, K. Zarifis, and S. Shenker, "Troubleshooting Blackbox SDN Control Software with Minimal Causal Sequences," in *SIGCOMM 2014*.

[5] **A. El-Hassany**, E. Kissel, D. Gunter, and M. Swany, "Design and Implementation of a Unified Network Information Service," in *IEEE International Conference on Services Computing (SCC)*, June 2013.

Workshops

[6] E. Kissel, **A. El-Hassany**, G. Fernandes, M. Swany, D. Gunter, T. Samak, and J. M. Schopf, "Scalable Integrated Performance Analysis of Multi-Gigabit Networks," in *IEEE Network Operations and Management Symposium (NOMS)*, 2012.

Technical Reports

[7] **Ahmed El-Hassany**, Petar Tsankov, Laurent Vanbever, and Martin Vechev. Network-wide configuration synthesis. *arXiv preprint arXiv:1611.02537*, 2016.

Demos

[8] **A. El-Hassany**, E. Kissel, and J. Griffioen, "GEMINI Tutorial: Measuring and instrumenting GENI experiment. GEC 13-16, 2012–2013."

[9] **A. El-Hassany**. E. Pouyoul, V. Singh, B. Tierney, I. Monga, S. Gangualy, M. Ikeda, M. Swany, and E. Kissel, "Using Periscope to monitor End-to-End Circuit Service at Layer 2 (ECSEL). SC'11."

Professional Experience

June 2015–Present **Research Assistant**, *ETH Zürich*, Switzerland.
- Network Programmability.
- SDN Verification `http://sdnracer.ethz.ch`. Published in [1, 3].

Spring 2015 **Research Associate**, *Indiana University*, Bloomington, IN.
- Measured garbage collector and data serialization overhead for unstructured data.
- Worked on developing efficient methods for representing data in Haskell's runtime system. Published in [2].

July 2013– Nov 2014 **Research Scientist**, *International Computer Science Institute*, Berkeley, CA.
- Worked designing and building next generation SDN architecture (SDNv2).
- Work on integrating STS project with ONOS; an open source SDN controller `http://onosproject.org/` and our work is published in [4].
- Help ONOS QA team adopt parts of STS in their testing infrastructure.

Summer '13 **Summer Student**, *Lawrence Berkeley National Laboratory*, Berkeley, CA.
- Worked with the Energy Sciences Network (ESnet) team.
- Designed and developed scalable multi-domain Topology Service for dynamic multi-domain network circuits' setup.
- *Technology used:* Java, Python, Tornado, MongoDB.

2011–2013 **Research Associate**, *Indiana University*, Bloomington, IN.
- Designed and developed a RESTful Unified Network Information Services (UNIS) to represent topologies for large-scale multi-domain networks.
- Designed and developed instrumentation and monitoring APIs and tools for GENI experiments and physical infrastructure.
- *Technology used:* Java, Python, Tornado, MongoDB.

Summer '10 **Summer Student**, *Lawrence Berkeley National Laboratory*, Berkeley, CA.
- Worked at the Center for Enabling Distributed Petascale Computing (CEDPS) project.
- Worked on designing and building system to collect, represent and analyze large scale monitoring data for high-speed data transfers in DOE networks.
- *Technology used:* Java, Python, Tornado, MongoDB.

Feb '09–July '09 **Software Engineer**, *Municipality of Gaza*, Gaza, Palestine.

- Designed a system to extract information, categorize and archive old, from late 1800s, building permits.
- Designed new business process and the required software for issuing building permits in Gaza.
- Lead a team of 50 civil engineers and 20 data entry persons to implement the project.
- *Technology used:* Oracle RDBMS, Visual Basic .NET, Delphi.

Dec '08–Mar. '09 **Independent Consultant**, *Palestinian National Internet Naming Authority (PNINA)*, Gaza, Palestine.

- Software quality assurance of in house built system for registering managing all .ps domain names; PNINA is the country code top-level domain (ccTLD) for Palestine.
- Consulting on deployment and integration for new domain registration system.
- *Technology used:* PHP, Perl, PostgreSQL, MySQL, BIND, Apache.

Summer '08 **Student Developer**, *Google Inc. & Internet2*, Google Summer of Code 2008.

- This project is sponsored by Google and administrated by Internet2.
- Designed and developed open source web based configuration tools for perfSONAR-PS.
- *Technology used:* Perl, JavaScript, Apache, HTML, CSS.

Sep. '07 – Mar. '08 **Software Engineer**, *AfkarIT*, Gaza, Palestine.

- Designed and developed operating system level virtual machines monitoring system for VMWare ESX Infrastructure.
- *Technology used:* Python, C#.

Sep. '04–Oct. '05 **Contractor Software Engineer**, *Ard El-Insan*, Gaza, Palestine.

- Designed and developed patients follow-up management system in four clinics for a project sponsored by European Commission's Humanitarian Aid Office (ECHO).
- *Technology used:* Visual Basic. NET, Microsoft SQL Server.

Activities and Services

- Attended Par Lab Boot Camp – short course on parallel programming, UC Berkeley 2010.
- SCinet student volunteer, Supercomputing Conference 2010, 2011, 2012.
- President of Graduate Students Association for Computer and Information Science Department at University of Delaware, (Fall 2010 – Spring 2011)
- Attended From Lab to Market, Fulbright Enrichment Seminar, Austin TX, June 1st-5th 2009.