

# Simon Knight

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<http://scholar.google.com.au/citations?user=BJ1Efr8AAAAJ>

## Education

### UNIVERSITY OF SOUTH AUSTRALIA

2015 – 2017 PhD *Computer and Information Science*, degree conferred February 2017. Thesis topic: *Abstractions and Transformations for Automated Data Network Configuration*.

### UNIVERSITY OF ADELAIDE

2009 – 2014 PhD Candidate, *Electrical & Electronic Engineering* (Transferred candidature)

Aug 2009 Bachelor of Economics

Dec 2008 Bachelor of Engineering (Telecommunications), First Class Honours

*Final year subjects:* Telecommunications, Communications, Computer Networks and Applications, Signal Processing, Advanced Telecommunications, Optical Communications, Communication Network Design

## Employment

### CISCO SYSTEMS

2016 – Software Engineer, Learning at Cisco.

Virtual Internet Routing Lab (VIRL/CML) platform. <http://virl.cisco.com>

- Developed AutoNetkit configuration engine from PhD code to component of shipping product.
- Designed and developed Live Visualisation for dynamic display of run-time topology information (traceroute, OSPF, BGP, STP, ...).
- Designed & developed browser based editor UI for VIRL topology authoring and editing.
- VIRL customer discussions at Cisco Live: San Francisco 2013, Cancun 2013, Melbourne 2014, San Diego 2015.

### CISCO SYSTEMS

2012 – 2016 Software Engineer, Chief Technology and Architecture Office. Work on VIRL project.

### UNIVERSITY OF ADELAIDE

2009 Research Assistant, TRC Mathematical Modelling. Ad-hoc network configuration (OLSRD, BATMAND) and packet analysis.

### INTERNODE

2007 – 2009 Software Support Team, Technical Operations. Operations systems maintenance in Java & Perl.

2006 – 2007 Research & Development, Agile Communications. Developed monitoring for rural wireless deployment.

2005 – 2007 Technical Support: Level one support for ADSL, web services, email, VoIP.

## Technical Skills and Interests

### NETWORKING

Configuration of OSPF, IS-IS, BGP and MPLS across IOS, IOS-XR, NX-OS, Junos and Quagga, and experience in approaches to configuration automation.

### SOFTWARE DEVELOPMENT

- Extensive Python experience with design and ongoing development of large-scale long-lived production codebases, including distributed and multi-threaded systems.
- Experience with front-end design in Javascript (jQuery, Backbone, Bootstrap)
- Experience in Java, PHP, Latex, Linux, XML, SQL, Matlab, Bash, Git, Go, Perl, and ZeroMQ.

### INTERESTS

Infrastructure Automation, Data Visualisation, User Experience, Data Networking and Telecommunications, Software Engineering, Systems Engineering, API Design, Workflow Development, Business Analysis.

## Refereed Journal Papers

- 2012 **Simon Knight**, Nickolas Falkner, Hung X. Nguyen, Paul Tune, and Matthew Roughan. I Can See For Miles: Re-visualising The Internet, *IEEE Network Magazine*, November, 2012.
- 2011 **Simon Knight**, Hung X. Nguyen, Nickolas Falkner, Rhys Bowden, and Matthew Roughan. The Internet Topology Zoo, *IEEE Journal on Selected Areas in Communications*, vol 29, no 9, 2011.

## Refereed Conference Papers

- 2013 **Simon Knight**, Hung X Nguyen, Iain Phillips, Olaf Maennel, Randy Bush, Nickolas Falkner, and Matthew Roughan. An Automated System for Emulated Network Experimentation, *ACM CoNEXT 2013*, Santa Barbara, California.
- 2011 Rhys Bowden, Hung X. Nguyen, Nickolas Falkner, **Simon Knight**, and Matthew Roughan. Planarity of Data Networks, *International Teletraffic Congress*, September, 2011, San Francisco.
- 2011 Eric Parsonage, H. X. Nguyen, Rhys Bowden, **Simon Knight**, Nickolas Falkner and Matthew Roughan. Generalized Graph Products for Network Design and Analysis, *The 19th IEEE International Conference on Network Protocols (ICNP 2011)*.
- 2010 Hung Nguyen, Matthew Roughan, **Simon Knight**, Nick Falkner, Olaf Maennel, and Randy Bush. How to Build Complex, Large-Scale Emulated Networks, *TridentCom 2010*; Berlin, Germany.
- 2009 **Simon Knight**, Simon Moschou, and Matthew Sorell. Analysis of Sensor Photo Response Non-Uniformity in RAW images, *e-Forensics 2009*; Adelaide, Australia;

## Refereed Demonstrations and Posters

- 2014 Joel Obstfeld, **Simon Knight**, Ed Kern, Qiang Sheng Wang, Tom Bryan, and Dan Bourque. VIRL: The Virtual Internet Routing Lab. Demonstration. *SIGCOMM 2014*, Chicago, USA.
- 2013 **Simon Knight**. Automated Configuration and Measurement of Emulated Networks with AutoNetkit. Demonstration. *SIGCOMM 2013*, Hong Kong.
- 2012 **Simon Knight**, Matthew Roughan, Askar Jaboldinov, Olaf Maennel, and Iain Phillips. AutoNetkit: Simplifying Large Scale, Open-Source Network Experimentation. Poster. *SIGCOMM 2012*, Helsinki, Finland.
- 2012 Ingmar Poesse, Benjamin Frank, **Simon Knight**, Niklas Semmler, and Georgios Smaragdakis. PaDIS Emulator: An Emulator to Evaluate CDN-ISP Collaboration. Demonstration. *SIGCOMM 2012*

## Unrefereed Publications

- 2013 **Simon Knight**, Hung Nguyen, Nickolas Falkner, and Matthew Roughan. Realistic Network Topology Construction and Emulation from Multiple Data Sources. Technical Report. *May, 2012*, The University of Adelaide.
- 2012 **Simon Knight**, Matthew Roughan, Askar Jaboldinov, Olaf Maennel, and Iain Phillips. Network Configuration: From Abstraction to Emulation. Report. *January, 2012*, The University of Adelaide.

## Presentations

- 2013 An Automated System for Emulated Network Experimentation, *CoNEXT 2013*, Santa Barbara, California.
- 2013 Using Python to design, configure, and measure large-scale networks; Session Presentation, *PyCon Australia 2013*, Hobart, Tasmania.
- 2012 AutoNetkit, Short Talk, *ACM Sigcomm Student Research Competition*, Helsinki, Finland, AusNOG 2012, *Australian Network Operators Group*, Melbourne.
- 2012 AutoNetkit; Seminar Presentation, *Google*, Sydney, Feb 2012; NICTA, Sydney, March 2012; *Swinburne University*, Melbourne, March 2012; *School of Electrical & Electronic Engineering, University of Adelaide*, March 2012.
- 2011 AutoNetkit Summary, *Junosphere day*, Loughborough University (via Skype), December 2011.
- 2010 Formal Methods for Data Network Design, Verification, and Configuration, *Seminar Presentation, School of Electrical & Electronic Engineering, University of Adelaide*; August 2010.
- 2010 How to Build Complex, Large-Scale Emulated Networks, *TridentCom 2010*; Berlin, Germany, May 2010; *Deutsche Telekom Laboratories, Technische Universität Berlin*, Germany, May 2010; *The University of Loughborough*, United Kingdom, May 2010.
- 2010 AutoNetkit, and Literature Review of Related Work; *WODNAFO 10 — the Workshop on Data Networks as Formal Objects*; Adelaide, Australia; Feb 2010.
- 2009 Analysis of Sensor Photo Response Non-Uniformity in RAW images, (co-presented), *e-Forensics 2009*; Adelaide, Australia.

## Awards

- 2014 Cisco Pioneer Award for Engineering Innovation, awarded to VIRL team. Presented by John Chambers.
- 2010, 2012, 2013 ACM SIGCOMM Travel Grant
- 2009 – 2012 Australian Postgraduate Award PhD scholarship
- 2009 Development Economics III Excellence Award
- 2008 The DSTO Surveillance Systems Undergraduate Prize
- 2008 Dean's Merit Certificate for Outstanding Academic Achievement (Electrical & Electronic Engineering)

## Teaching

- 2009 – 2012 Tutoring and Practical Demonstration: *Computer Networks and Applications* (2009, 2010), *Electrical Engineering 1A* (2010, 2012), *Project Management for Electrical Engineers* (2010, 2011), *Computer Science 1B* (2009), *Introduction to C and Matlab* (2009)

## Projects

- 2011 The Internet Topology Zoo <http://topology-zoo.org>
- 2009 – AutoNetkit <http://www.autonetkit.org>
- Code for both projects is available on GitHub <https://github.com/sk2>.

## Service

- 2014 – Member, USENIX
- 2011, 2012 President, University of Adelaide IEEE Student Branch. Vice-President, 2008, 2010.
- 2011–2012 Committee Member, IEEE SA
- 2010, 2011 Organiser, School of Electrical & Electronic Engineering Research Expo
- 2008 – Member, ACM and SIGCOMM
- 2006 – 2013 Student Member, IEEE