

George R. Louthan IV

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Education

University of Tulsa

Master of Science in Computer Science

Thesis: A Formal Approach to Cyber-Physical Event Reconstruction With Hybrid Automata

Bachelor of Science in Computer Science

Bachelor of Science in Mathematics

Tulsa, OK

May 2011

(expected)

May 2009

May 2009

Certifications

Committee on National Security Systems 4011-4016

National Information Assurance Training Standards. Issued by the University of Tulsa.

4011 Information Systems Security Professional

4012 Senior Systems Manager

4013 System Administrator

4014 Information Systems Security Officer

4015 System Certifier

4016 Risk Analyst

Tulsa, OK

May 2006

Dec 2007

May 2010

May 2011

Dec 2009

May 2010

Employment History

University of Tulsa

Research university with a prestigious information security program and extensive research operations under its Institute for Information Security, an NSA/CSS Center of Excellence in information assurance.

Graduate Research Assistant

Information security engineering student lead for formal methods research. Collaborating with researchers in cyber security training, information visualization, and critical infrastructure protection initiatives. Peer-reviewed publications in cyber security education, network intelligence, and secure collaboration.

Led the development and deployment of the Institute's IT infrastructure and supervising its upkeep (approximately 40 workstations and 5 servers).

Graduate Teaching Assistant

Taught a sophomore-level programming lab in the Java language. Developed supplementary course materials on code style, algorithms, documentation, and best practices.

Undergraduate Research Scientist

Undergraduate researcher in the Enterprise Security Group. Worked in enterprise security management, threat modeling, network intelligence, and information visualization. Peer-reviewed publications in network intelligence.

Tulsa, OK

May 2009 -
Present

Jan 2010 -
May 2010

May 2006 -
May 2009

IV Consulting, Inc.

Custom software contractor, working in database and web services.

Tulsa, OK

Co-owner/Developer

Co-founder of the company as well as web and database developer in Python's Django framework. Developing two production systems for patient management and subject tracking for a psychiatric hospital and brain research institution. Responsible for back-end web development, project management, client relations, and documentation.

Jul 2010 -
Present

Vidoop

Technology start-up company that produced a web-based multi-factor authentication product and advertising platform.

Tulsa, OK

Security Research Intern

Performed a vulnerability assessment on the user-facing portions of the company's authentication product. Developed proof-of-concept code for several attacks, including bypassing the product's CAPTCHA properties using computer vision. Delivered a comprehensive report and developed proof-of-concept mitigation strategies.

May 2008 -
Sep 2008

Technical Writing Intern

Served as a copy writer and editor for technical documentation, specifications, white papers, user documentation, and marketing materials. Developed, recorded, and narrated a series of educational videos for Vidoop's products as well as OpenID. Primary author on the corporate blog. Worked closely both with developers and business personnel. Staffed the company's exhibit at the IT Security World trade show.

May 2007 -
Mar 2009

Projects

GSM Scale

Project for the wireless collection and remote analysis of patients' weights as automatically recorded by a cellular-enabled scale. Collaboration with Alexander Barclay (Laureate Institute for Brain Research) and Kevin Hall (National Institute of Diabetes and Digestive and Kidney Diseases).

Tulsa, OK

Bench-to-Bedside Grant (Collaborator: NIH)

Designing and developing the scale client hardware and software, as well as participating in the specification of reporting protocols and web service API.

Jul 2010 -
Present

Neuroimaging Research Database System

End-to-end management solution for neuroimaging research project including subject tracking and medical charting, lab and assessment result management, billing, and auditing.

Tulsa, OK

IV Consulting (Client: Laureate Institute for Brain Research)

Managing and supervising development. Specific personal responsibilities include documentation, project management, client interaction, and development of the auditing, report generation, and cost tracking/billing subsystems.

Sep 2010 -
Present

Laureate Psychiatric Clinic and Hospital Electronic Intake System

Electronic, web-based version of LPCH's legacy pen-and-paper intake system. Manages the creation of new patients, basic demographic information, personal inventory, and other data collection. Generates daily new patient reports for medical charts.

Tulsa, OK

IV Consulting (Client: LPCH) Supervised development of the entire system; responsible for development of report generation and clinical staff views for patient tracking. Managed documentation and client interactions.	Sep 2010 - Nov 2010
SAND/DVNE Network monitoring and visualization tool for the passive identification of network protocols using signatures.	Tulsa, OK
Enterprise Security Group, University of Tulsa Led a network monitoring research group; contributed to the original design and executed subsequent reimplementations of the protocol identification library (SAND). Oversaw the project's successful test deployment at FAA Computer Security Incident Response Center. Co-developed a large-screen multi-touch network traffic visualization tool (DVNE). Contributing to future work by actively maintaining the library.	May 2007 - Present
Disastro Citizen-facing relief management system for disaster response; includes web service and IVR (phone) data collection and reporting capabilities. Senior semester capstone project from Senior Software course.	Tulsa, OK
Senior Software, University of Tulsa Served as project lead and IVR developer. Responsibilities focused upon design, architecture, specification, documentation, developer coordination, and project management.	Jan 2009 - May 2009
Sample Class Projects Selected example class projects from University of Tulsa coursework.	Tulsa, OK
University of Tulsa Pascal compiler front-end, Intrusion Detection System (Snort subset rule compatible), Web server, Comprehensive IT system deployment plan, Top-down corporate risk assessment (team), Formal model for IT contingency planning, Reinforcement learner agent for Infinite Mario	Aug 2005 - May 2011

Academics

Instructor Information Security: Assurance and Risk Assessment (short course – taught applied portions), Fundamentals of Algorithms and Computer Applications Lab

Teaching Assistant Fundamentals of Algorithms and Computer Applications Lecture

Information Assurance Coursework Network Security, Secure System Administration, Risk Management for Information Systems, Information Systems Assurance, Enterprise Security Management, Computer Security, Computer Forensics, Applied Cyber Defense (independent study)

Computer Science Coursework Mobile Device Application Development, Computational Neuroscience, Machine Learning, Senior Software Projects, Compiler Construction, Operating Systems, Artificial Intelligence, Computer Animation, Computer Networks, Computer Network Analysis (independent study)

Mathematics Coursework Numerical Methods, Numerical Methods for IVP/BVP PDEs, Modern Algebra, Real Analysis, Linear Algebra, Mathematics Seminar (a survey of unusual problems)

Conferences

- **USENIX Security Symposium** Participant (2009 - 2010)
 Workshop: Cyber Security Experimentation and Test – Speaker (2010)
 Event: Poster Session – Presenter (2009)
- **Blackhat USA** Participant (2010)
- **DEFCON Human** (2008, 2010), Speaker (2009)
- **University of Tulsa Student Research Colloquium** General Co-Chair (2010), Speaker and Session Chair (2009)
 Special Topic Symposium: Cyber Security and Critical Infrastructure – Speaker and Symposium Chair (2010)
- **International Conference on Internet Computing (ICOMP) at WORLDCOMP** Speaker (2009)
- **Computer Security and Information Intelligence Research Workshop (CSIIRW)** Speaker (2009)
- **International Conference for High Performance Computing, Networking, Storage and Analysis (SC)** Participant (2008)
- **IT Security World** Exhibitor (2008)

Publications and Presentations

- “The Blunderdome: An Offensive Exercise for Building Network, Systems, and Web Security Awareness”¹. Paper at CSET 2010 at 19th USENIX Security Symposium, September 2010. G Louthan, W Roberts, M Butler, and J Hale.
- “Toward Sensitive Information Redaction in a Collaborative, Multilevel Security Environment”¹. Paper at WikiSym 2010, July 2010. P Gehres, N Singleton, G Louthan, and J Hale.
- “Towards Formal Analysis of Cyber-Physical Systems”. Presentation at the Cyber Security and Critical Infrastructure Symposium at the 2010 TU Student Research Colloquium, March 2010. G Louthan, N Singleton, M Papa, and J Hale.
- “Large-scale Multitouch Interactive Network Visualization”. Poster at the 18th USENIX Security Symposium, August 2009. C Pollet, G Louthan and J Hale.
- “SAND: An Architecture for Signature-based Automatic Network Protocol Detection”. Poster at the 18th USENIX Security Symposium, August 2009. G Louthan and J Hale.
- “Hack Like the Movie Stars: A Big-Screen Multitouch Network Monitor”. Presentation at DEFCON 17, August 2009. G Louthan, C Pollet, and J Hale.
- “Toward Robust and Extensible Network Protocol Identification”¹. Paper at ICOMP '09, July 2009. G Louthan, C McMillan, C Johnson, and J Hale.
- “Content-based Alternatives to Conventional Network Monitoring”¹. Paper at CSIIRW '09, April 2009. G Louthan, B Deetz, M Walker, and J Hale.

¹Denotes a peer-reviewed publication

- “Communication without Boundaries: Breaching the Great Firewall of China”. Presentation at the 2009 TU Student Research Symposium and 84th Regional Meeting of AAAS-SWARM, March 2009. G Louthan and J Hale. (Honorable Mention for Best Presentation)

Awards and Honors

General Co-Chair, TU Student Research Colloquium	2010
Chair, Computer Security Special Topic Symposium, TU Student Research Colloquium	2010
Honorable Mention, Best Presentation, AAAS-SWARM 2009	2009
Runner-Up, Donald W. Reynolds Governor’s Cup Business Plan Competition	2007
University of Tulsa Presidential Scholar	2005 - 2009

Skill set

Languages Python; Java; Lisp (Clojure and Common Lisp); \LaTeX ; Mathematica; some Ruby, Perl, PHP, and Objective C

Platforms Linux (especially Debian/Ubuntu, also OpenWRT/FreeWRT); Windows (modern workstation and server versions); VMWare ESXi (3 and 4); Mac OS X

Technologies Computer networking (TCP/IP); Virtualization; Firewalls (iptables and Shorewall, some pf and Cisco); Django; Version control (Subversion and Mercurial); Network monitoring and IDS; Android OS; iOS; Application security; Forensics; PKI.

Processes Risk management for information systems (NIST SP 800-30), including some familiarity with IT aspects of Sarbanes-Oxley risk assessment (PCAOB Auditing Standard 5); Information Security Management (ISO/IEC 17799:2005); Information Assurance Controls and Accreditation (NIST SP 800-53 and DoDI 8510.01); Incident response and computer forensics; General policy development; General familiarity with NIST 800 series

Mathematics Numerical analysis; Finite difference methods; Finite element analysis; Real analysis; Discrete mathematics; Modern algebra; Finite state automata; Hybrid automata; Process calculi; Analysis of algorithms

Soft skills Flexible and easy-going; Very strong written and verbal communication skills; Skilled at explaining technical concepts to laypeople; Comfortable in social settings; Experienced and extremely comfortable giving lectures and presentations