

Vassil Roussev

Curriculum Vitae

Background

Education:

Ph.D. Computer Science, 2003, University of North Carolina, Chapel Hill, NC
M.S. Computer Science, 1998, University of North Carolina, Chapel Hill, NC
M.S. Computer Science, 1995, Sofia University, Sofia, Bulgaria
B.S. Computer Science, 1994, Sofia University, Sofia, Bulgaria

Experience

A. Academic:

- 2003-present: Assistant Professor, University of New Orleans, Computer Science Department
- 2006-present: Co-Director, Network Security and System Administration Laboratory (NSSAL), University of New Orleans, Computer Science Department
- 1996-2002: Research Assistant, Distributed Collaborative Systems, University of North Carolina
- 1999 (summer): Instructor, Introductory Programming, University of North Carolina
- 1994-95: Teaching Assistant, Database Systems, Sofia University

B. Other professional:

- 1994-96: Software Engineer and Consultant, Fadata Ltd., Sofia
- 1992-94 Software Engineer, Geographic Information Systems, CAD R&D Center, Sofia

Scholarly and Creative Productivity

1. Publications

A. Books

N/A

B. Refereed/Invited Publications

a. Book chapters

- Roussev, V., Richard, G., Marziale, L. "Classprints: Class-aware Similarity Hashes." In Ray, I., Sheno, S. (eds.), *Research Advances in Digital Forensics IV*. Springer, 2008. ISBN: 978-0-387-84926-3.
- Richard G., Roussev, V., Marziale, L. "In-place File Carving." In Craiger, P., Sheno, S. (eds.), *Research Advances in Digital Forensics III*. Springer, 2007. ISBN: 978-0-387-73741-6, pp. 217-230.
- Richard, G, Roussev, V. "Digital Forensics Tools: The Next Generation." In Kanellis et al (ed.), *Digital Crime and Forensic Science in Cyberspace*. Idea Group Publishing, 2006. ISBN: 1591408725, pp.75-90.
- Richard, G, Roussev, V. "Toward Secure, Audited Processing of Digital Evidence: Filesystem Support for Digital Evidence Bags." In Olivier, M., Sheno, S. (eds.), *Research Advances in Digital Forensics II*. Springer, 2006. ISBN: 0387368906, pp.29-40.

- Chen, Y, Roussev, V., Richard, G., Gao, Y. “Content-Based Image Retrieval for Digital Forensics.” In Pollitt, M, Sheno, S. (eds.), *Research Advances in Digital Forensics*. Springer, 2005. ISBN: 0387300120, pp.271-282.

b. Journal articles

- Richard, G., Roussev, V., Marziale, L. “Forensic Discovery Auditing of Digital Evidence Containers.” *Journal of Digital Investigation*, (4)2, 2007.
- Richard, G., Roussev, V. “Next Generation Digital Forensics: Strategies for Rapid Turnaround of Large Forensic Targets.” *Communications of the ACM*, Vol. 49(2), Feb 2006.
- Gao, Y., Richard, G. Roussev, V. “Bluepipe: A Scalable Architecture for On-the-spot Digital Forensics.” *International Journal of Digital Evidence*, Summer 2004, Volume 3(1).

c. Refereed monographs

N/A

d. Refereed proceedings

- Case, A., Cristina, A., Marziale, L., Richard, G., Roussev, V. “FACE: Automated Digital Evidence Discovery and Correlation.” In *Proceedings of the Eighth Annual DFRWS Conference*, pp. 65-75, Aug 2008, Baltimore, MD.
- Roussev, V. Richard, G., Marziale, L. “Hash-based Classification of Data.” Fourth Annual IFIP WG 11.9 International Conference on Digital Forensics, Jan 2008, Kyoto, Japan. (*highest-ranked paper*)
- V. Roussev, Richard, G., Marziale, L. “Multi-Resolution Similarity Hashing. *Proceedings of the 2007 DFRWS Conference (DFRWS)*. Elsevier, pp. 105-114, Pittsburgh, PA, Aug 2007.
- Marziale, L., Richard, G., Roussev, G. “Massive Threading: Using GPU to Increase the Performance of Digital Forensic Tools.” In *Proceedings of the 2007 DFRWS Conference* Elsevier, pp. 73-81, Pittsburgh, PA, Aug 2007. (*highest-ranked paper*)
- Roussev, V., Chen, Y., Bourg, T., Richard, G. “md5bloom: Forensic Filesystem Hashing Revisited.” In *Proceedings of the 2006 Digital Forensics Research Workshop (DFRWS)*, Elsevier, pp. 82-90, West Lafayette, IN, Aug 2006.
- Roussev, V., Priego, G., Richard, G., “TouchSync: Lightweight Synchronization for Ad-Hoc Mobile Collaboration.” In *Proceedings of the 2006 IEEE International Symposium on Collaborative Technologies and Systems (CTS)*, IEEE, pp.181-188, May 2006, Las Vegas, NV.
- Roussev, V., Richard, G., Tingstrom, D. “dRamDisk: Efficient RAM Sharing on a Commodity Cluster.” In *Proceedings of the 25th IEEE International Performance Computing and Communications Conference (IPCCC)*. Apr 2006, Phoenix, AZ.
- Roussev, V., Dewan, P. “Supporting High Coupling and User-Interface Flexibility.” In *Proceedings of the 9th European Conference on Computer-Supported Cooperative Work (ECSCW)*. Sep 2005, Paris, France.
- Richard, G., Roussev, V. “Scalpel: A Frugal, High-Performance File Carver.” In *Proceedings of the 2005 Digital Forensics Research Workshop (DFRWS)*. Aug 2005, New Orleans, LA.
- Roussev, V. “Abstraction Flexibility in a Collaborative Infrastructure.” In *Proceedings of the International Conference on Knowledge Sharing and Collaborative Engineering (KSCE)*. Nov 2004, St. Thomas, US Virgin Islands.

- Rousev, V., Richard, G. "Breaking the Performance Wall: The Case for Distributed Digital Forensics." *Proceedings of the 2004 Digital Forensics Research Workshop (DFRWS)*. Aug 2004, Baltimore, MD.
- Richard, G., Rousev, V., et al. "Bluepipe: Portable Tools for Minimally Invasive, On-the-Spot Computer Forensics Surveys." *Proceedings of the 2003 Digital Forensics Research Workshop (DFRWS)*. Aug 2003, Cleveland, OH.
- Rousev, V., Dewan, P., Jain, V. "Composable Collaboration Infrastructures Based on Programming Patterns." In *Proceedings of the 2000 ACM Conference on Computer-Supported Cooperative Work (CSCW)*. Dec 2000, Philadelphia, PA.
- Rousev, V., et al. "Integrating XML and Object-based Programming for Distributed Collaboration." In *IEEE International Workshops on Enabling Technologies for Collaborative Enterprises (WET ICE)*. Jun 2000, Bethesda, MD.

C. Other Publications

- Rousev, V. "Flexible Sharing of Distributed Objects Based on Programming Patterns." Department of Computer Science, University of North Carolina, Chapel Hill, NC, 2003. Ph.D Thesis.

2. Items Accepted for Publication but Not Yet Published

- Rousev, V. "Advanced Hashing Techniques in Digital Forensics." *IEEE Security and Privacy*, Mar 2009.
- Rousev, V. "Building a Better Similarity Trap with Statistically Improbable Features." *Proceedings of the 42nd Hawaii International Conference on System Sciences*, IEEE, Jan 2009.

3. Artistic or Other Creative Contributions

Software tools

- TouchSync: A framework for ad-hoc lightweight synchronization of *Bluetooth* devices
- md5bloom: A client/server tool for manipulating Bloom filters
- mrshash: A tool for similarity hashing
- FACE: A framework for automated digital evidence discovery and correlation
- mmr: A MapReduce framework for distributed digital forensic processing

4. Participation at Professional Meetings

- Case, A., Cristina, A., Marziale, L., Richard G., Rousev, V. "FACE: Automated Digital Evidence Discovery and Correlation." Eighth Annual DFRWS Conference, Aug 2008, Baltimore, MD.
- Rousev, V., Richard, G., Marziale, L. "Hash-based Classification of Data." Fourth Annual IFIP WG 11.9 International Conference on Digital Forensics, Jan 2008, Kyoto, Japan.
- Rousev, V. "The Information Assurance Program at the University of New Orleans." NSA Center of Academic Excellence in Information Assurance PI meeting, Oct 2007, Albuquerque, NM
- Rousev, V., Richard, G., Marziale, L. "Multi-Resolution Similarity Hashing." The 2007 DFRWS Conference (DFRWS), Aug 2007, Pittsburgh, PA.
- Rousev, V. "Research Challenges and Approaches for Next-Generation Digital Forensics." IFIP 11.9 Digital Forensics Working Group 2007 Meeting, Jun 2007, Louisville, KY. (invited presentation)
- Marziale, L., Richard, G., Rousev, V. "Massive Threading: Using GPU to Increase the Performance of Digital Forensic Tools." The 2007 DFRWS Conference, Aug 2007, Pittsburgh, PA.
- Rousev, V., Chen, Y., Bourg, T., Richard, G. "md5bloom: Forensic Filesystem Hashing Revisited." The 2006 Digital Forensics Research Workshop (DFRWS), Aug 2006, West Lafayette, IN.

- Roussev, V., Priego, G., Richard, G. “TouchSync: Lightweight Synchronization for Ad-Hoc Mobile Collaboration.” The 2006 IEEE International Symposium on Collaborative Technologies and Systems (CTS), May 2006, Las Vegas, NV.
- Roussev, V., Richard, G., Tingstrom, D. “dRamDisk: Efficient RAM Sharing on a Commodity Cluster.” The 25th IEEE International Performance Computing and Communications Conference (IPCCC), Apr 2006, Phoenix, AZ.
- Roussev, V., Dewan, P. “Supporting High Coupling and User-Interface Flexibility.” 9th European Conference on Computer-Supported Cooperative Work (ECSCW), Sep 2005, Paris, France.
- Richard, G, Roussev, V. “Scalpel: A Frugal, High-Performance File Carver.” 2005 Digital Forensics Research Workshop (DFRWS), Aug 2005, New Orleans, LA.
- Roussev, V. “Abstraction Flexibility in a Collaborative Infrastructure.” The International Conference on Knowledge Sharing and Collaborative Engineering (KSCE). Nov 2004, St. Thomas, US Virgin Islands.
- Roussev, V., Richard, G. “Breaking the Performance Wall: The Case for Distributed Digital Forensics.” The 2004 Digital Forensics Research Workshop (DFRWS). Aug 2004, Baltimore, MD.
- Richard, G., Roussev, V., et al. “Bluepipe: Portable Tools for Minimally Invasive, On-the-Spot Computer Forensics Surveys.” The 2003 Digital Forensics Research Workshop (DFRWS), Aug 2003, Cleveland, OH.
- Roussev, V., Dewan, P., Jain, V. “Composable Collaboration Infrastructures Based on Programming Patterns.” 2000 ACM Conference on Computer-Supported Cooperative Work (CSCW), Dec 2000, Philadelphia, PA.
- Roussev, V., et al. “Integrating XML and Object-based Programming for Distributed Collaboration.” IEEE International Workshops on Enabling Technologies for Collaborative Enterprises (WETICE), Jun 2000, Bethesda, MD.

5. Other Scholarly or Creative Activities

A. Service in role of discussant, critic, reviewer for professional meeting or publications

Reviewer:

- Digital Forensic Research Workshop/Conference (DFRWS)—2005, 2006, 2007, 2008
- IFIP 11.9 Working Group International Conference on Digital Forensics (ICDE)—2006, 2007, 2008
- IEEE International Workshop on Systematic Approaches to Digital Forensic Engineering (SADFE)—2005, 2007, 2008
- The International Symposium on Collaborative Technologies and System (CTS)—2005, 2006, 2007, 2008
- International Annual Workshop on Digital Forensics & Incident Analysis (WDFIA)—2006, 2007, 2008
- ACM Computer-Supported Cooperative Work Conference (CSCW)—2000, 2002, 2004, 2006
- Conference on Human Factors in Computing Systems (CHI)—2004, 2005, 2006
- Journal of CSCW (JCSCW)—2003, 2003, 2005
- Transactions on Computer-Human Interaction (TOCHI)—2004

B. Service in role of officer of professional organization, program committee member, session organizer for professional meeting

- Board of Directors/Co-Founder, Digital Forensic Research Workshop (DFRWS) non-profit organization, 2005-present

- Organizing Committee, DFRWS Conference: 2005, 2006, 2007 (PC Chair), 2008, 2009
- Program Committee, DFRWS Conference: 2005, 2006, 2007 (Chair), 2008, 2009

Program Committee Service

- ICDE–2006, 2007, 2008
- SADFE–2005, 2007, 2008
- CTS–2005, 2006, 2007, 2008
- WDFIA–2006, 2007, 2008

C. General editorship of journal, monograph series, book series

- Editorial Board, *Journal of Digital Investigation* (DIIN), 2008-present

D. Professional society membership

- Association for Computing Machinery (ACM)
- Institute of Electrical and Electronics Engineers (IEEE)

6. Awards, Lectureships, or Prizes

N/A

7. Grants and Contracts

A. Grants and contracts received

PI

- “Advanced Digital Forensic Processing of Large Data Sets.” 2007-2010, LA Board of Regents RCS Subprogram, \$104,412. (ranked #1 (tie) out of 160 proposals)
- “Dynamic Management of Security Policies for the METOC Data Bus.” 2008-2009, Space and Naval Warfare Systems Command (US Navy), \$69,920.
- “Dynamic Policy Management System for Information Assurance.” 2007-2008, Space and Naval Warfare Systems Command (US Navy), \$145,000.
- “Distributed Environment for Large-Scale Digital Forensic Investigations.” 2004, Sun Microsystems Academic Excellence Grant, Award # EDUD-7824-0501049-US, \$95,200.

Co-PI

- “The LONI Institute: Advancing Biology, Materials, and Computational Sciences for Research, Education, and Economic Development.” PI: Ed Seidel (LSU). 2007-2012. LA Board of Regents P-KSFI Primarily Research Subprogram, \$7,000,000.
- “Information Assurance Scholarship Program.” 2008-2009, Department of Defense, PI: G. Richard, \$113,494.
- “Information Assurance Distance Learning.” 2008-2009, Space and Naval Warfare Systems Command (US Navy), \$\$\$.

B. Grants and contracts applied for

Pending grants and contracts

- (PI) “CAREER: An Integrated Framework for Scalable Digital Forensic Processing”, National Science Foundation, \$551,485.
- (Co-PI) “Collaborative Research: CT-M: A Framework for High-Performance Forensics on GPUs and Multi-core CPUs.” National Science Foundation, PI: G.Richard, \$628,320.

Declined grant proposals

- (PI) “REU Site: Information Assurance at the University of New Orleans.” \$486,991. (ranked *competitive*)
- (PI) “CAREER: Scalable Digital Forensic Processing.” National Science Foundation, \$524,949.
- (PI) “CAREER: Advanced Digital Forensic Processing of Large Data Sets.” National Science Foundation, \$553,205.
- (Co-PI) “SFS: Information Assurance Scholarships at the University of New Orleans.” PI: G. Richard, \$1,976,979.
- (Co-PI) “SFS: Capacity Building: Curriculum Development for Faculty Teaching Digital Forensics.” National Science Foundation, PI: G. Richard, \$204,970.
- (Co-PI) “CT-ISG: Forensic Reconstruction of Live Computer Systems.” National Science Foundation, PI: G. Richard, \$429,454.
- (Co-PI) “Next-generation Data Carving Tools.” PI: G. Richard, National Institute of Justice, \$334,270. (invited full proposal)
- (Co-PI) “On-site Forensic Acquisition and Discovery (OnTRAC).” PI: G. Richard, National Institute of Justice, \$763,377.
- (Co-PI) “A Portable Appliance Platform for Digital Forensic Triage.” PI: G. Richard, National Institute of Justice, \$302,139.

8. Thesis/Dissertation Committee Service

Current

- M.S. Advisor:
 - Liqiang Wang, “A MapReduce Framework for High-Performance Digital Forensics,” 05/2009.
 - Robert Martell, “Dynamic Visualization of Security Policies,” 05/2009.
- Ph.D. Committee Member:
 - Lodovico Marziale, Digital Forensics
 - Joseph Hua, Digital Forensics
 - Salman Javaid, Database Support for Digital Forensics
 - Paul Flowers, Digital Forensics
- M.S. Committee Member
 - Brian Roux

Completed

- M.S. Advisor:
 - Tim Bourg, “Bloom Filters for Filesystem Forensics,” 12/2006.
 - Daniel Tingstrom, “Cluster-based Disk Caching,” 12/2005.
 - Gabriel Perez, “Ad-hoc Repository Sharing on Mobile Devices,” 05/2005.
- Ph.D. Committee Member:
 - Michael Ruth, “Automating End-to-end Regression Test Selection for Web Services”, 08/2007
- M.S. Committee Member
 - Michael Ruth, Seema Sharma, Shoban Pattam, Yacine Chikhi, Sonal Mandelecha, John Vigo, Sanjeeb Mishra

9. Major Areas of Creative or Research Interest

- Digital forensics—high-performance processing of large forensic targets
- Computer security—robust monitoring of information flows and data leak protection
- Computer security—dynamic visualization of security policies
- Distributed computing—high-performance on commodity hardware
- Collaborative computing—lightweight abstractions and services for ad-hoc collaboration

10. *Other Professional Accomplishments*

A. Manuscripts under submission

- V. Roussev. “Forensic Data Fingerprinting Using Statistically-Improbable Features.” *Journal of Digital Investigation*.
- V. Roussev, L.Wang, “A MapReduce Framework for High-Performance Digital Forensics.” Fifth Annual IFIP WG 11.9 International Conference on Digital Forensics, Orlando, FL.

B. Course/Program design and development

The following existing undergraduate course have been completely redesigned with new, up-to-date lecture materials and new projects:

- CSCI 4401: Principles of Operating Systems I
- CSCI 4311: Computer Networking and Telecommunications
- CSCI 2025: Data Structures and Applications
- CSCI 3090: Undergraduate Seminar

The following *new* graduate courses have been developed and taught as Special Topics classes (CSCI 6990) and are in the process of being incorporated into the graduate curriculum:

- Distributed Collaborative Applications (Fall 2004)
- User Interface Design and Human-Computer Interaction (Fall 2006)
- Data Compression (Spring 2008)
- High-Performance Computing (Fall 2008)

CSCI 6450 - Principles of Distributed Systems has been completely redesigned, including the use of live remote lectures in the Fall 2005 semester following Hurricane Katrina. Similarly, CSCI 4311 was also delivered remotely in the same semester.

C. Special recognition for teaching

D. Academic service

a. On-campus

Department of Computer Science committee service:

- Facilities (chair)
- Graduate studies
- Undergraduate appeals
- Graduate appeals

UNO Collegiate Cyber Defense Team. Established the UNO Collegiate Cyber Defense Team; obtained sponsorship for the team; served as its faculty advisor. The team placed 2nd in its first appearance at the Southwest Regional Collegiate Cyber Defense competition in Corpus Christi, TX (Feb 2008).

b. Off-campus

UNO representative, Louisiana Optical Networking Initiative (LONI) Allocations Committee
2005-present

E. Other service

