STEFAN CHRISTOV

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EDUCATION

University of Massachusetts Amherst — *Amherst, MA*
Ph.D. Candidate in Computer Science — *September 2009 – Present*
Dissertation: Process Guidance for Human-Intensive Processes
Advisers: Prof. George S. Avrunin, Prof. Lori A. Clarke

Master of Science in Computer Science — *August 2006 – September 2009*
Summa cum laude (GPA: 3.98/4.0)

State University of New York, College at Brockport — *Brockport, NY*
Bachelor of Science in Computer Science — *August 2002 – May 2006*
Summa cum laude (Honors student, GPA: 3.93/4.0)
Second major in **Computational Science**
Minor in **Mathematics**

TEACHING AND MENTORING EXPERIENCE

University of Massachusetts Amherst — *Amherst, MA*
Teaching Assistant — *September 2010 – December 2010*
- Course: *Advanced Software Engineering: Analysis and Evaluation* – combined graduate and undergraduate class
- Gave lectures on unit testing, use of assertions, model checking, and the use of software engineering techniques for improving medical processes
- Held office hours twice a week, helped graduate and undergraduate students with course material and homework-related questions
- Developed and graded homework assignments, graded exams, maintained the class web site

University of Massachusetts Amherst — *Amherst, MA*
Research Mentor of Undergraduate Students — *September 2007 – Present*
- Advised two senior undergraduate students on year-long honors thesis research projects
- Advised two undergraduate students in Research Experience for Undergraduates (REU) programs
- Supervised two undergraduate programmers

University of Massachusetts Amherst — *Amherst, MA*
Student in Introduction To Scientific Teaching — *September 2012 – December 2012*
- Studied pedagogical strategies for scientific teaching and for handling diversity in classroom
- Designed and presented teaching module, critiqued lectures, course syllabi, and grading rubrics

State University of New York, College at Brockport — *Brockport, NY*
Lab Instructor — *September 2005 – May 2006*
- Led lab sessions for introductory programming class in Java

State University of New York, College at Brockport — *Brockport, NY*
Tutor — *October 2002 – May 2003*
- Tutored undergraduate students in introductory Computer Science and College Mathematics for Equal Opportunity Program

RESEARCH EXPERIENCE

UNIVERSITY OF MASSACHUSETTS AMHERST *Amherst, MA*
Research Assistant, Laboratory for Advanced Software Engineering Research *August 2006–Present*
- Advisers: Prof. George S. Avrunin, Prof. Lori A. Clarke
- Performing research on online process guidance, validation and analysis of formal process definitions, process elicitation, process modeling languages, and exception handling patterns in processes
- Currently evaluating approaches for online process guidance on medical processes—blood transfusion, chemotherapy, and patient-controlled analgesia

SIEMENS CORPORATE RESEARCH *Princeton, NJ*
Research Intern, User Experience Group *June – September 2010*
- Adviser: Dr. Sam Zheng
- Developed workflow visualization techniques and method for automatically generating user interface design suggestions based on formal workflow model
- Implemented visual workflow editor based on Eclipse Graphical Modeling Framework

HARVARD MEDICAL SCHOOL *Cambridge, MA*
Research Intern, Laboratory for Translational Research *June – August 2005*
- Adviser: Dr. Huseyin Aktas
- Developed computational tools for characterizing 5' untranslated regions of human messenger RNA

STATE UNIVERSITY OF NEW YORK, COLLEGE AT BROCKPORT *Brockport, NY*
Research Assistant *June 2003 – May 2006*
- Adviser: Dr. Sandeep Mitra
- Researched traceability in software development and evaluated proposed software engineering methodology by developing electronic journaling tool and hotel reservation system

ADDITIONAL WORK EXPERIENCE

STATE UNIVERSITY OF NEW YORK, COLLEGE AT BROCKPORT *Brockport, NY*
Student IT Support Staff, Information Technology Support Services *August 2003 – May 2006*
- Supervised largest computing center on campus, troubleshot faculty and staff PC/MAC/network problems over phone, provided technical support to campus computers and network

SAP BULGARIA LTD *Sofia, Bulgaria*
Intern *December 2004 – January 2005*
- Provided training for SAP services to clients

PUBLICATIONS

Journal Publications

[1] Wilson Mertens, Stefan Christov, George S. Avrunin, Lori A. Clarke, Leon J. Osterweil, Lucinda J. Cassells, and Jenna Marquard. "Using process elicitation and validation to understand and improve chemotherapy ordering and delivery". In: *The Joint Commission Journal on Quality and Patient Safety* 38.11 (2012), pp. 497–505.

[2] Barbara Staudt Lerner, Stefan Christov, Leon J. Osterweil, Reda Bendraou, Udo Kannengiesser, and Alexander Wise. "Exception handling patterns for process modeling". In: *IEEE Transactions on Software Engineering* 36.2 (2010), pp. 162–183.

[3] Stefan Christov, Bin Chen, George S. Avrunin, Lori A. Clarke, Leon J. Osterweil, David Brown, Lucinda Cassells, and Wilson Mertens. "Formally defining medical processes". In: *Methods of Information in Medicine. Special Topic on Model-Based Design of Trustworthy Health Information Systems* 47.5 (2008), pp. 392–398.

[4]   Stefan C. Christov and Borislava I. Simidchieva. "Examining the role of iteration in the complete lifecycle of a traceability-oriented software development process". In: *Journal of Computing Sciences in Colleges* 21.6 (2006), pp. 266–267.

Refereed Conference and Workshop Publications

[1]   Stefan C. Christov, George S. Avrunin, and Lori A. Clarke. "Considerations for online deviation detection in medical processes". In: *Proceedings of the 2013 ICSE Workshop on Software Engineering in Health Care*. SEHC '13. San Francisco, CA, USA, 2013, pp. 50–56.

[2]   George S. Avrunin, Lori A. Clarke, Leon J. Osterweil, Stefan C. Christov, Bin Chen, Elizabeth A. Henneman, Philip L. Henneman, Lucinda Cassells, and Wilson Mertens. "Experience modeling and analyzing medical processes: UMass/baystate medical safety project overview". In: *Proceedings of the 1st ACM International Health Informatics Symposium*. IHI '10. Arlington, Virginia, USA: ACM, 2010, pp. 316–325.

[3]   Stefan C. Christov, George S. Avrunin, Lori A. Clarke, Leon J. Osterweil, and Elizabeth A. Henneman. "A benchmark for evaluating software engineering techniques for improving medical processes". In: *Proceedings of the 2010 ICSE Workshop on Software Engineering in Health Care*. SEHC '10. Cape Town, South Africa: ACM, 2010, pp. 50–56.

[4]   Jenna L. Marquard, Stefan Christov, Philip L. Henneman, Lori A. Clarke, Leon J. Osterweil, George S. Avrunin, Donald L. Fisher, Elizabeth A. Henneman, Megan M. Campbell, Tuan A. Pham, and Qi Ming Lin. "Studying rigorously defined health care processes using a formal process modeling language, clinical simulation, observation, and eye tracking (poster)". In: *Proceedings of the 9th Bi-annual international conference on Naturalistic Decision Making*. NDM'09. Swinton, UK, UK: British Computer Society, 2009, p. 32.

[5]   Barbara Staudt Lerner, Stefan Christov, Alexander Wise, and Leon J. Osterweil. "Exception handling patterns for processes". In: *WEH '08: Proceedings of the 4th international workshop on Exception handling*. Atlanta, Georgia: ACM, 2008, pp. 55–61.

[6]   Stefan Christov, Bin Chen, George S. Avrunin, Lori A. Clarke, Leon J. Osterweil, David Brown, Lucinda Cassells, and Wilson Mertens. "Rigorously defining and analyzing medical processes: an experience report". In: *Models in Software Engineering: Workshops and Symposia at MoDELS 2007, Nashville, TN, USA, September 30 - October 5, 2007, Reports and Revised Selected Papers* (2008), pp. 118–131.

[7]   Borislava I. Simidchieva and Stefan C. Christov. "The role of iteration in the early phases of a traceability-oriented software development process". In: *Proceedings of the 20th National Conference on Undergraduate Research*. 2006.

Non-Refereed Publications

[1]   Stefan C. Christov, Tiffany Y. Chao, and Lori A. Clarke. *Generating natural-language process descriptions from formal process models*. Tech. rep. UM-CS-2012-040. Amherst, MA 01003: School of Computer Science, University of Massachusetts, 2012.

[2]   Stefan Christov, George S. Avrunin, Lori A. Clarke, Philip L. Henneman, Jenna L. Marquard, and Leon J. Osterwiel. *Using event streams to validate process definitions*. Tech. rep. UM-CS-2009-004. Amherst, MA 01003: School of Computer Science, University of Massachusetts, 2009.

PROFESSIONAL PRESENTATIONS

- "Considerations for online deviation detection in medical processes". *5th Workshop on Software Engineering in Healthcare, May 20, 2013*

- "A benchmark for evaluating software engineering techniques for Improving medical processes". *2nd Workshop on Software Engineering in Healthcare, May 3, 2010*
- "Using human simulations to validate formal process definitions". *University of Massachusetts Amherst, School of Computer Science, Systems Lunch, December 2, 2008.*
- "Rigorously defining and analyzing medical processes". *First International Workshop on the Model-Based Design of Trustworthy Health Information Systems, September 30, 2007.*
- "The role of iteration in the early phases of a traceability-oriented software development process" (co-presented with Borislava Simidchieva). *National Conference for Undergraduate Research, 2006*

SOFTWARE

The software below is developed collaboratively. Collaborators are listed in corresponding publications.
- **Little-JIL Online Deviation Detector:** Framework for detecting when process performers deviate from recommended process as specified by formal process model
- **SmartChecklist:** Dynamic, context-sensitive checklist for providing guidance to process performers based on formal process model
- **Little-JIL Narrator:** Tool for generating natural language description of process based on Little-JIL process model

SERVICE

- Graduate Representative (elected to represent the Computer Science graduate students—participated in faculty meetings, organized seminars, designed and conducted graduate student surveys)   *January 2010 – January 2011*
- Member of New Student Committee (helped organize main event for newly admitted CS graduate students at UMass Amherst)   *September 2008 – May 2012*
- President, Computer Science Club, SUNY Brockport (Vice President until September 2005)   *August 2004 – January 2006*
- Treasurer, Computational Science Club, SUNY Brockport (Secretary until August 2005) *August 2004 2006*
- Student Volunteer, International Conference on Software Engineering   *2009, 2011*
- Student Volunteer, Supercomputing Conference, Seattle   *2005*
- Student Volunteer, International Conference on Computational Science, Atlanta   *2005*

HONORS AND AWARDS

- SUNY Chancellor's Award for Student Excellence (highest award in the SUNY system)   *2006*
- SUNY Brockport School of Letters and Sciences Award   *2006*
- SUNY Brockport Honors Program Scholar Award   *2006*
- National Collegiate Computer Science Award   *2006*
- National Dean's List   *2004, 2005*
- Member of the Honors program at SUNY Brockport   *2002 – 2006*
- Member of Alpha Chi, National Honors Society   *2005*
- Sigma Xi Undergraduate Research Award in Computer Science   *2005*
- SUNY Brockport Annual Interdisciplinary Award in Mathematics   *2004*
- Collegiate All-American Scholar Award   *2004*
- SUNY Brockport Distinguished Scholar in Residence Award   *2002 – 2006*
- SUNY Brockport Scholar in Recognition Award   *2002 – 2006*
- SUNY Brockport Computational, Math, Science, and Technology Institute Fellowship   *2003 – 2005*

PROFESSIONAL AFFILIATIONS

- Member of ACM
- Member of ACM SIGCSE
- Member of ACM SIGSOFT
- Member of IEEE