

Curriculum Vitae

Tevfik Bultan

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Department of Computer Science
University of California
Santa Barbara, CA 93106

E-mail: bultan@cs.ucsb.edu
URL: <http://www.cs.ucsb.edu/~bultan/>

Current Research Interests

service oriented computing, concurrency, model checking, static analysis, software engineering

Degrees

Ph.D., August 1998, Department of Computer Science, University of Maryland, College Park
Thesis: *Automated Symbolic Analysis of Reactive Systems*
Advisor: Richard Gerber

M.S., January 1992, Department of Computer Engineering and Information Science, Bilkent University, Ankara, Turkey
Thesis: *Parallel Circuit Partitioning and Mapping Heuristics Based on Mean Field Annealing*
Advisor: Cevdet Aykanat

B.S., June 1989, Department of Electrical and Electronics Engineering, Middle East Technical University, Ankara, Turkey

Work Experience

Vice Chair, Department of Computer Science, University of California, Santa Barbara, November 2005–present

Associate Professor, Department of Computer Science, University of California, Santa Barbara, July 2004–present (on sabbatical leave during the 2004-2005 academic year)

Visiting Associate Professor, Department of Computer Science, University of Maryland, College Park, October 2004–September 2005

Visiting Scientist, Fraunhofer Center for Experimental Software Engineering, Maryland, October 2004–September 2005

Visiting Scientist, Naval Research Laboratory, Center for High Assurance Computer Systems, September 2004–September 2005

Assistant Professor, Department of Computer Science, University of California, Santa Barbara, September 1998–June 2004

Research/Teaching Assistant, Department of Computer Science, University of Maryland, College Park, January 1994–August 1998

Research/Teaching Assistant, Department of Computer Engineering and Information Science, Bilkent University, Ankara, Turkey, September 1989–August 1993

Honors and Awards

Keynote speaker, 19th International Conference on Concurrency Theory (CONCUR 2008)

Invited speaker, 1st International Workshop on Numerical Abstractions for Software Verification (2008)

Keynote speaker, 6th ACM-IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE 2008)

Invited speaker, 2nd International Workshop on Automated Specification and Verification of Web Systems (WWV 2006)

Best paper award, 20th IEEE/ACM International Conference on Automated Software Engineering (ASE 2005)

ACM SIGSOFT distinguished paper award, 20th IEEE/ACM International Conference on Automated Software Engineering (ASE 2005)

Invited panelist, IFIP Working Conference on Verified Software: Theories, Tools, Experiments, ETH Zurich, Switzerland (2005)

Invited speaker, 2nd International Symposium on Automated Technology on Verification and Analysis (ATVA 2004)

National Science Foundation Faculty Early Career Development (CAREER) Award, 2000

Regents' Junior Faculty Fellowship, University of California, Santa Barbara, 1999

NATO Science Fellowship, 1993

Grants

Instructional Development, University of California, Santa Barbara

Project Title: *Software Support for Web-based Interaction in Computer Science Capstone Projects*
Amount: \$11,593 Period: 2008-2009 (sole PI)

National Science Foundation

Project Title: *CT-T: Modeling and Analyzing Trust in Service-Oriented Architectures*
Grant CNS-0716095 Amount: \$850,000 Period: 2007-2010 (Co-PI, joint with Giovanni Vigna and Richard Kemmerer)

Instructional Development, University of California, Santa Barbara

Project Title: *Support for Computer Engineering Program Capstone Projects*
Amount: \$986 Period: 2007 (sole PI)

National Science Foundation

Project Title: *SoD-HCER: Design for Verification*
Grant CCF-0614002 Amount: \$200,000 Period: 2006-2008 (sole PI)

Committee on Research, University of California, Santa Barbara

Project Title: *Design for Verification: A New Approach for Developing Highly Dependable Software*
Amount: \$7,000 Period: 2006-2007 (sole PI)

National Science Foundation

Project Title: *REU Supplement: Reliable Concurrent Software Development via Reliable Concurrency Controllers*

Grant CCF-0530377 Amount: \$6,000 Period: 2005-2006 (sole PI)

National Science Foundation

Project Title: *Reliable Concurrent Software Development via Reliable Concurrency Controllers*

Grant CCF-0341365 Amount: \$336,000 Period: 2003-2007 (sole PI)

Committee on Research, University of California, Santa Barbara

Project Title: *Developing Reliable Concurrency Controllers*

Amount: \$8,913 Period: 2003-2004 (sole PI)

National Science Foundation Faculty Early Career Development (CAREER) Award

Project Title: *CAREER: Verifiable Specifications: Tools for Reliable Reactive Software Development*

Grant CCF-9970976 Amount: \$200,000 Period: 2000-2004 (sole PI)

National Science Foundation

Project Title: *A Composite Model Checking Toolset for Analyzing Software Systems*

Grant CCF-9984822 Amount: \$300,000 Period: 1999-2003 (sole PI)

Committee on Research, University of California, Santa Barbara

Project Title: *Tools and Techniques for Workflow Specifications*

Amount: \$6,000 Period: 1999-2000 (Joint with Jianwen Su)

NATO Advanced Study Institute Travel Grant, 1997

Scientific and Technical Research Council of Turkey (TUBITAK) Travel Grant, 1997

Goldhaber Travel Grant, University of Maryland, College Park, 1997

Department of Computer Science Travel Grant, University of Maryland, College Park, 1997

Publications

Edited Books

1. Proceedings of the Workshop on Testing, Analysis and Verification of Web Software (TAV-WEB 2008), Tevfik Bultan and Tao Xie, editors, ACM, ISBN: 978-1-60558-052-4.
2. Proceedings of the Workshop on Testing, Analysis and Verification of Web Services and Applications (TAV-WEB 2006), Tevfik Bultan, editor, ACM, ISBN: 1-59593-458-8.

Refereed Journal Papers

1. Graham Hughes and Tevfik Bultan. "Automated Verification of Access Control Policies Using a SAT Solver." To appear in the *International Journal on Software Tools for Technology Transfer (STTT)*, special issue on selected papers from the Workshop on Web Quality, Verification and Validation (WQVV 2007).
2. Graham Hughes and Tevfik Bultan. "Interface Grammars for Modular Software Model Checking." To appear in *IEEE Transactions on Software Engineering (TSE)*, special issue on selected papers from the 2007 ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSA 2007).

3. Tevfik Bultan and Xiang Fu. “Specification of Realizable Service Conversations Using Collaboration Diagrams.” *Service Oriented Computing and Applications (SOCA)*, special issue on selected papers from the *IEEE International Conference on Service Oriented Computing and Applications (SOCA 2007)*, vol. 2, no. 1, pp. 27–39, April 2008.
4. Tevfik Bultan and Constance Heitmeyer. “Applying Infinite State Model Checking and Other Analysis Techniques to Tabular Requirements Specifications of Safety-Critical Systems.” To appear in *Design Automation for Embedded Systems (DAEM)*, special issue on selected papers from the *Fourth ACM-IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE 2006)*.
5. Aysu Betin-Can, Tevfik Bultan, Mikael Lindvall, Benjamin Lux, and Stefan Topp. “Eliminating Synchronization Faults in Air Traffic Control Software via Design for Verification with Concurrency Controllers.” *Automated Software Engineering (ASE)*, special issue on selected papers from the *20th International Conference on Automated Software Engineering (ASE 2005)*, vol. 14, no. 2, pp. 129–178, June 2007.
6. Mikael Lindvall, Ioana Rus, Paolo Donzelli, Atif Memon, Marvin Zelkowitz, Aysu Betin-Can, Tevfik Bultan, Chris Ackermann, Bettina Anders, Sima Asgari, Victor Basili, Jorg Fellmann, Daniel Hirschbach, Lorin Hochstein, Forrest Shull, Roseanne Tvedt and Daniel Pech. “Experimenting with Software Testbeds for Evaluating New Technologies.” *Empirical Software Engineering (ESE)*, vol. 12, no. 4, pp. 417–444, August 2007.
7. Aysu Betin-Can and Tevfik Bultan. “Highly Dependable Concurrent Programming Using Design for Verification.” *Formal Aspects of Computing (FACS)*, special issue on *Verified Software: Theories, Tools, Experiments (VSTTE) Conference*, vol. 19, no. 2, pp. 243–268, June 2007.
8. Tevfik Bultan, Xiang Fu, Jianwen Su. “Analyzing Conversations of Web Services.” *IEEE Internet Computing*, vol. 10, no. 1, pp. 18–25, January/February 2006.
9. Constantinos Bartzis and Tevfik Bultan. “Efficient BDDs for Bounded Arithmetic Constraints.” *International Journal on Software Tools for Technology Transfer (STTT)*, special issue on selected papers from the *9th International Conference on Tools and Algorithms for the Construction and Analysis of Software Systems (TACAS 2003)*, vol. 8, no. 1, pp. 26–36, February 2006.
10. Xiang Fu, Tevfik Bultan, Jianwen Su. “Synchronizability of Conversations among Web Services.” *IEEE Transactions on Software Engineering (TSE)*, special issue on Interaction and State-Based Modeling, vol. 31, no. 12, pp. 1042–1055, December 2005.
11. Xiang Fu, Tevfik Bultan, and Jianwen Su. “Realizability of Conversation Protocols With Message Contents.” *International Journal of Web Services Research (JWSR)*, special issue on selected papers from the *2004 IEEE International Conference on Web Services (ICWS 2004)*, vol. 2, no. 4, pp. 68–93, October 2005.
12. Xiang Fu, Tevfik Bultan and Jianwen Su. “Conversation Protocols: A Formalism for Specification and Verification of Reactive Electronic Services.” *Theoretical Computer Science (TCS)*, special issue on selected papers from the *8th International Conference on Implementation and Application of Automata (CIAA 2003)*, vol. 328, no. 1–2, pp. 19–37, November 2004.
13. Zhe Dang, Tevfik Bultan, Oscar H. Ibarra and Richard A. Kemmerer. “Past Pushdown Timed Automata and Safety Verification.” *Theoretical Computer Science (TCS)*, special issue on selected papers from the *6th International Conference on Implementation and Application of Automata (CIAA 2001)*, vol. 313, no. 1, pp. 57–71, February 2004.

14. Tuba Yavuz-Kahveci and Tevfik Bultan. “A Symbolic Manipulator for Automated Verification of Reactive Systems with Heterogeneous Data Types.” *International Journal on Software Tools for Technology Transfer (STTT), special issue on selected papers from the 7th International Conference on Tools and Algorithms for the Construction and Analysis of Software Systems (TACAS 2001)*, vol. 5, no. 1, pp. 15–33, November 2003.
15. Constantinos Bartzis and Tevfik Bultan. “Efficient Symbolic Representations for Arithmetic Constraints in Verification.” *International Journal of Foundations of Computer Science (IJFCS), special issue on Verification and Analysis of Infinite State Systems*, vol. 14, no. 4, pp. 605–624, August 2003.
16. Oscar H. Ibarra, Jianwen Su, Zhe Dang, Tevfik Bultan and Richard A. Kemmerer. “Counter Machines and Verification Problems.” *Theoretical Computer Science (TCS)*, vol. 289, no. 1, pp. 165–189, October 2002.
17. Oscar H. Ibarra, Tevfik Bultan and Jianwen Su. “On Reachability and Safety in Infinite-State Systems.” *International Journal of Foundations of Computer Science (IJFCS)*, vol. 12, no. 6, pp. 821–836, December 2001.
18. Tevfik Bultan, Richard Gerber and Christopher League. “Composite Model Checking: Verification with Type-Specific Symbolic Representations.” *ACM Transactions on Software Engineering and Methodology (TOSEM), special issue on selected papers from the 1998 ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 1998)*, vol. 9, no. 1, pp. 3–50, January 2000.
19. Tevfik Bultan, Richard Gerber and William Pugh. “Model Checking Concurrent Systems with Unbounded Integer Variables: Symbolic Representations, Approximations and Experimental Results.” *ACM Transactions on Programming Languages and Systems (TOPLAS)*, vol. 21, no. 4, pp. 747–789, July 1999.
20. Cevdet Aykanat, Tevfik Bultan and İsmail Haritaoğlu. “A Fast Neural Network Algorithm for VLSI Cell Placement.” *Neural Networks*, vol. 11, no. 9, pp. 1671–1684, December 1998.
21. Tevfik Bultan and Cevdet Aykanat. “Circuit Partitioning Using Mean Field Annealing.” *Neurocomputing*, vol. 8, pp. 171–194, 1995.
22. Tevfik Bultan and Cevdet Aykanat. “A New Mapping Heuristic Based on Mean Field Annealing.” *Journal of Parallel and Distributed Computing (JPDC)*, vol. 16, pp. 292–305, December 1992.

Refereed Conference Papers

1. Fang Yu, Chao Wang, Aarti Gupta and Tevfik Bultan. “Modular Verification of Web Services Using Efficient Symbolic Encoding and Summarization.” To appear in the *Proceedings of the Sixteenth ACM SIGSOFT Symposium on Foundations of Software Engineering (FSE 2008)*.
2. Elliot D. Barlas and Tevfik Bultan. “NetStub: A Framework for Verification of Distributed Java Applications.” To appear in the *Proceedings of the 22nd IEEE/ACM International Conference on Automated Software Engineering (ASE 2007)*.
3. Fang Yu, Tevfik Bultan and Erik Peterson. “Automated Size Analysis for OCL.” To appear in the *Proceedings of the 6th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE 2007)*.
4. Graham Hughes and Tevfik Bultan. “Interface Grammars for Modular Software Model Checking.” *Proceedings of the 2007 ACM/SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2007)*, pp. 39–49, London, United Kingdom, July 2007.

5. Tevfik Bultan and Xiang Fu. “Specification of Realizable Service Conversations Using Collaboration Diagrams.” *Proceedings of the IEEE International Conference on Service-Oriented Computing and Applications (SOCA 2007)*, pp. 122–130, Newport Beach, California, June 2007.
6. Tevfik Bultan and Constance Heitmeyer. “Analyzing Tabular Requirements Specifications Using Infinite State Model Checking.” *Proceedings of the Fourth ACM-IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE 2006)*, pp. 7–16, Napa, CA, July 2006.
7. Aysu Betin-Can, Tevfik Bultan, Mikael Lindvall, Benjamin Lux, and Stefan Topp. “Application of Design for Verification with Concurrency Controllers to Air Traffic Control Software.” *ACM SIGSOFT Distinguished Paper Award, ASE 2005 Best Paper Award. Proceedings of the 20th IEEE International Conference on Automated Software Engineering (ASE 2005)*, pp. 14–23, Long Beach, California, USA, November 2005.
8. Tevfik Bultan and Aysu Betin-Can. “Scalable Software Model Checking Using Design for Verification.” To appear in the *Proceedings of the IFIP Working Conference on Verified Software: Theories, Tools, Experiments (VSTTE)*, Zurich, Switzerland, October 10-14, 2005.
9. Tuba Yavuz-Kahveci and Tevfik Bultan. “Verification of Parameterized Hierarchical State Machines Using Action Language Verifier.” *Proceedings of the Third ACM-IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE 2005)*, pp. 79–87, Verona, Italy, July 2005.
10. Aysu Betin-Can and Tevfik Bultan. “Verifiable Web Services with Hierarchical Interfaces.” *Proceedings of the 2005 IEEE International Conference on Web Services (ICWS 2005)*, pp. 85–94, Orlando, Florida, USA, July 2005.
11. Aysu Betin-Can, Tevfik Bultan and Xiang Fu. “Design for Verification for Asynchronously Communicating Web Services.” *Proceedings of the Fourteenth International World Wide Web Conference (WWW 2005)*, pp. 750–759, Chiba, Japan, May 2005.
12. Aysu Betin-Can and Tevfik Bultan. “Verifiable Concurrent Programming Using Concurrency Controllers.” *Proceedings of the 19th IEEE International Conference on Automated Software Engineering (ASE 2004)*, pp. 248–257, Linz, Austria, September 2004.
13. Constantinos Bartzis and Tevfik Bultan. “Widening Arithmetic Automata.” *Proceedings of the 16th International Conference on Computer Aided Verification (CAV 2004)*, Rajeev Alur and Doron Peled, eds., *Lecture Notes in Computer Science*, vol. 3114, pp. 321–333, Boston, Massachusetts, July 2004.
14. Xiang Fu, Tevfik Bultan, and Jianwen Su. “Model Checking XML Manipulating Software.” *Proceedings of the 2004 ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2004)*, pp. 252–262, Boston, Massachusetts, July 2004.
15. Xiang Fu, Tevfik Bultan, and Jianwen Su. “Realizability of Conversation Protocols With Message Contents.” *Proceedings of the 2004 IEEE International Conference on Web Services (ICWS 2004)*, pp. 96–103, San Diego, California, July 2004.
16. Xiang Fu, Tevfik Bultan, and Jianwen Su. “Analysis of Interacting BPEL Web Services.” *Proceedings of the 13th International World Wide Web Conference (WWW 2004)*, pp. 621–630, New York, New York, May 2004.
17. Xiang Fu, Tevfik Bultan and Jianwen Su. “Conversation Protocols: A Formalism for Specification and Verification of Reactive Electronic Services.” *Proceedings of the 8th International Conference on Implementation and Application of Automata (CIAA 2003)*, O. Ibarra and Z. Dang, eds., *Lecture Notes in Computer Science*, vol. 2759, pp. 188–200, Santa Barbara, California, July 2003.

18. Constantinos Bartzis and Tevfik Bultan. “Efficient Image Computation in Infinite State Model Checking.” *Proceedings of the 15th International Conference on Computer Aided Verification (CAV 2003)*, W. A. Hunt and F. Somenzi, eds., *Lecture Notes in Computer Science*, vol. 2725, pp. 249–261, Boulder, Colorado, July 2003.
19. Tevfik Bultan, Xiang Fu, Richard Hull and Jianwen Su. “Conversation Specification: A New Approach to Design and Analysis of E-Service Composition.” *Proceedings of the 12th International World Wide Web Conference (WWW 2003)*, pp. 403–410, Budapest, Hungary, May 2003.
20. Constantinos Bartzis and Tevfik Bultan. “Construction of Efficient BDDs for Bounded Arithmetic Constraints.” *Proceedings of the 9th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2003)*, H. Garavel and J. Hatcliff, eds., *Lecture Notes in Computer Science*, vol. 2619, pp. 394–408, Warsaw, Poland, April 2003.
21. Tuba Yavuz-Kahveci and Tevfik Bultan. “Automated Verification of Concurrent Linked Lists with Counters.” *Proceedings of the 9th International Static Analysis Symposium (SAS 2002)*, M. V. Hermenegildo and G. Puebla, eds., *Lecture Notes in Computer Science*, vol. 2477, pp. 69–84, Madrid, Spain, September 2002.
22. Tuba Yavuz-Kahveci and Tevfik Bultan. “Specification, Verification, and Synthesis of Concurrency Control Components.” *Proceedings of the 2002 ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2002)*, pp. 169–179, Rome, Italy, July 2002.
23. Giorgio Delzanno and Tevfik Bultan. “Constraint-based Verification of Client-Server Protocols.” *Proceedings of the 7th International Conference on Principles and Practice of Constraint Programming (CP 2001)*, T. Walsh, ed., *Lecture Notes in Computer Science*, vol. 2239, pp. 286–301, Paphos, Cyprus, December 2001.
24. Tuba Yavuz-Kahveci, Murat Tuncer, and Tevfik Bultan. “A Library for Composite Symbolic Representations.” *Proceedings of the 7th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2001)*, Tiziana Margaria and Wang Yi, eds., *Lecture Notes in Computer Science*, vol. 2031, pp. 52–66, Genova, Italy, April 2001.
25. Xiang Fu, Tevfik Bultan, Richard Hull, and Jianwen Su. “Verification of Vortex Workflows.” *Proceedings of the 7th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2001)*, Tiziana Margaria and Wang Yi, eds., *Lecture Notes in Computer Science*, vol. 2031, pp. 143–157, Genova, Italy, April 2001.
26. Zhe Dang, Tevfik Bultan, Oscar H. Ibarra, and Richard A. Kemmerer. “Past Pushdown Timed Automata.” *Proceedings of the 6th International Conference on Implementation and Application of Automata (CIAA 2001)*, University of Pretoria, Pretoria, South Africa, July 2001.
27. Tevfik Bultan. “Action Language: A Specification Language for Model Checking Reactive Systems.” *Proceedings of the 22nd International Conference on Software Engineering (ICSE 2000)*, pp. 335–344, University of Limerick, Ireland, June 2000.
28. Tevfik Bultan. “BDD vs. Constraint-Based Model Checking: An Experimental Evaluation for Asynchronous Concurrent Systems.” *Proceedings of the 6th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2000)*, Susanne Graf and Michael Schwartzbach, eds., *Lecture Notes in Computer Science* vol. 1785, pp. 441–455, Berlin, Germany, March 2000.
29. Oscar H. Ibarra, Tevfik Bultan, and Jianwen Su. “Reachability Analysis for Some Models of Infinite-

- State Transition Systems.” *Proceedings of the 11th International Conference on Concurrency Theory (CONCUR 2000)*, Catuscia Palamidessi, ed., *Lecture Notes in Computer Science* vol. 1877, pp. 183-198, University Park, Pennsylvania, August 2000.
30. Zhe Dang, Oscar H. Ibarra, Tevfik Bultan, Richard A. Kemmerer, and Jianwen Su. “Binary Reachability Analysis of Discrete Pushdown Timed Automata.” *Proceedings of the 12th International Conference on Computer Aided Verification (CAV 2000)*, E. Allen Emerson and A. Prasad Sistla, eds., *Lecture Notes in Computer Science* vol. 1855, pp. 69-84, Chicago, Illinois, July 2000.
 31. Oscar H. Ibarra, Jianwen Su, Zhe Dang, Tevfik Bultan, and Richard A. Kemmerer. ”Counter Machines: Decidable Properties and Applications to Verification Problems.” *Proceedings of the 25th International Symposium on Mathematical Foundations of Computer Science (MFCS 2000)*, M. Nielsen and B. Rovan, eds., *Lecture Notes in Computer Science*, vol. 1893, pp. 426-435, Bratislava, Slovak Republic, August 2000.
 32. Tevfik Bultan, Richard Gerber and Christopher League. “Verifying Systems with Integer Constraints and Boolean Predicates: A Composite Approach.” *Proceedings of the 1998 ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 1998)*, pp. 113-123, Clearwater Beach, Florida, March 1998.
 33. Tevfik Bultan, Richard Gerber and William Pugh. “Symbolic Model Checking of Infinite State Systems Using Presburger Arithmetic.” *Proceedings of the 9th International Conference on Computer Aided Verification (CAV 1997)*, Orna Grumberg, ed., *Lecture Notes in Computer Science* vol. 1254, pp. 400-411, Haifa, Israel, June 1997.
 34. Tevfik Bultan, Jeffrey Fischer and Richard Gerber. “Compositional Verification by Model Checking for Counter-Examples.” *Proceedings of the 1996 ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 1996)*, San Diego, California, pp. 224-238, January 1996.
 35. Tevfik Bultan and Cevdet Aykanat. “Circuit Partitioning Using Parallel Mean Field Annealing Algorithms.” *Proceedings of the 3rd IEEE Symposium on Parallel and Distributed Processing (SPDP 1991)*, Dallas, Texas, pp. 534-541, December 1991.
 36. Tevfik Bultan and Cevdet Aykanat. “Parallel Mean Field Algorithms for the Solution of Combinatorial Optimization Problems.” *Artificial Neural Networks: Proceedings of the 1991 International Conference on Artificial Neural Networks (ICANN 1991)*, T. Kohonen, ed., vol. 1, pp. 591-596, Amsterdam, The Netherlands, 1991.

Refereed Short Conference Papers

1. Tuba Yavuz-Kahveci, Constantinos Bartzis, and Tevfik Bultan. “Action Language Verifier, Extended.” Tool paper. *Proceedings of the 17th International Conference on Computer Aided Verification (CAV 2005)*, pp. 413-417, Edinburgh, Scotland, UK, July 6-10, 2005.
2. Xiang Fu, Tevfik Bultan, and Jianwen Su. “WSAT: A Tool for Formal Analysis of Web Services.” Tool paper. *Proceedings of the 16th International Conference on Computer Aided Verification (CAV 2004)*, Rajeev Alur and Doron Peled, eds., *Lecture Notes in Computer Science*, vol. 3114, pp. 510-514, Boston, Massachusetts, July 13-17, 2004.
3. Constantinos Bartzis and Tevfik Bultan. “Automata-Based Representations for Arithmetic Constraints in Automated Verification.” Poster paper. *Proceedings of the 7th International Conference on Implementation and Application of Automata (CIAA 2002)*, Jean-Marc Champarnaud and Denis Maurel,

eds., *Lecture Notes in Computer Science*, vol. 2608, pp. 282-288, University of Tours, Tours, France, July 2002.

4. Tevfik Bultan and Tuba Yavuz-Kahveci. "Action Language Verifier." *Proceedings of the 16th IEEE International Conference on Automated Software Engineering (ASE 2001)*, pp. 382-386, Coronado Island, California, November 2001.

Refereed Workshop Papers

1. Fang Yu, Tevfik Bultan, Marco Cova, and Oscar H. Ibarra. "Symbolic String Verification: An Automata-based Approach." To appear in the Proceedings of the 15th International SPIN Workshop on Model Checking of Software (SPIN 2008).
2. Graham Hughes, Tevfik Bultan and Muath Alkhalaf. "Client and Server Verification for Web Services Using Interface Grammars." To appear in the Proceedings of the Workshop on Testing, Analysis and Verification of Web Software (TAV-WEB 2008).
3. Graham Hughes and Tevfik Bultan. "Extended Interface Grammars for Automated Stub Generation." To appear in the *Proceedings of the Automated Formal Methods Workshop (AFM 2007)*.
4. Graham Hughes and Tevfik Bultan. "Automated Verification of XACML Policies Using a SAT Solver." *Workshop Proceedings of the 7th International Conference on Web Engineering, Workshop on Web Quality, Verification and Validation (WQVV 2007)*, pp. 378-392, Como, Italy, July 16-20, 2007.
5. Xiang Fu, Tevfik Bultan, and Jianwen Su. "A Top-Down Approach to Modeling Global Behaviors of Web Services." *Proceedings of the Requirements Engineering for Open Systems Workshop (REOS 2003)*, Monterey, California, September 2003.
6. Aysu Betin-Can and Tevfik Bultan "Interface-Based Specification and Verification of Concurrency Controllers." *Proceedings of the Workshop on Software Model Checking (SoftMC 2003)*. *Electronic Notes in Theoretical Computer Science (ENTCS)*, vol. 89, no. 3, Boulder, Colorado, July 2003.
7. Xiang Fu, Tevfik Bultan and Jianwen Su. "Formal Verification of E-Services and Workflows." *Proceedings of the Workshop on Web Services, e-Business, and the Semantic Web: Foundations, Models, Architecture, Engineering and Applications (WES 2002)*, C. Bussler, R. Hull, S. McIlraith, M.E. Orłowska, B. Pernici and J. Yang, eds., *Lecture Notes in Computer Science*, vol. 2512, pp. 188-202, Toronto, Canada, May 2002.
8. Tuba Yavuz-Kahveci and Tevfik Bultan. "Heuristics for Efficient Manipulation of Composite Constraints." *Proceedings of the 4th International Workshop on Frontiers of Combining Systems (FroCoS 2002)*, Alessandro Armando, ed., *Lecture Notes in Artificial Intelligence*, vol. 2309, pp. 57-71, Santa Margherita Ligure, Italy, April 2002.

Refereed Book Chapters

1. Tevfik Bultan, Xiang Fu, and Jianwen Su. "Analyzing Conversations: Realizability, Synchronizability, and Verification." *Test and Analysis of Web Services*, Luciano Baresi and Elisabetta Di Nitto (eds.), pp. 57-86, Springer, 2007.

Invited Papers

1. Tevfik Bultan. "Service Choreography and Orchestration with Conversations." To appear in the *Proceedings of the Nineteenth International Conference on Concurrency Theory*.

2. Jianwen Su, Tevfik Bultan, Xiang Fu, and Xiangpeng Zhao. “Towards a Theory of Web Service Choreographies.” To appear in the *Proceedings of the 4th International Workshop on Web Services and Formal Methods (WS-FM 2007)*.
3. Xiang Fu, Tevfik Bultan, and Jianwen Su. “Realizability Analysis of Top-down Web Service Composition Specifications.” To appear in *Web Services Research and Practices, Volume 2 of the Advances in Web Services Research (WSR) Series*, Liang-Jie Zhang (ed.), Idea Group, Inc., 2007
4. Tevfik Bultan. “Modeling Interactions of Web Software.” *Proceedings of the Second International Workshop on Automated Specification and Verification of Web Systems (WWV 2006)*, pp. 525–529, November 2006.
5. Jianwen Su, Tevfik Bultan and Xiang Fu. “Web Service Interactions: Analysis and Design.” *Proceedings of the Second International Workshop on Semantic and Dynamic Web Processes (SDWP 2005)*, pp. 14–19, Orlando, Florida, USA, July 2005.
6. Tevfik Bultan, Xiang Fu and Jianwen Su. “Tools for Automated Verification of Web Services.” In *Proceedings of the Second International Symposium on Automated Technology on Verification and Analysis (ATVA 2004)*, Farn Wang, ed., *Lecture Notes in Computer Science*, vol. 3299, pp. 8–10, Taipei, Taiwan, November 2004.

Other Publications

1. Tevfik Bultan. “Developing Verifiable Concurrent Software.” Position paper. CAV 2008 Workshop on Exploiting Concurrency Efficiently and Correctly.
2. Tevfik Bultan and Xiang Fu. “Realizability of Interactions in Collaboration Diagrams.” Technical report 2006-11, Department of Computer Science, University of California, Santa Barbara, September 2006.
3. Tevfik Bultan, Constance Heitmeyer and John O’Leary. “Panel on Design for Verification.” Panel position paper. *Proceedings of the Third ACM/IEEE International Conference on Formal Methods and Models for Co-Design (MEMOCODE 2005)*, pp. 233–235, Verona, Italy, July 2005.
4. Shriram Krishnamurthi and Tevfik Bultan. “Characteristics of Web Services and Their Impact on Testing, Analysis and Verification.” Discussion summary. *Workshop on Testing, Analysis and Verification of Web Services (TAV-WEB 2004)*. *ACM SIGSOFT Software Engineering Notes (SEN)*, vol. 30, no. 1, January 2005.
5. Graham Hughes and Tevfik Bultan “Automated Verification of Access Control Policies.” Technical report 2004-22, Department of Computer Science, University of California, Santa Barbara, September 2004.
6. Sandeep Shukla, Tevfik Bultan and Constance Heitmeyer. “Given that Hardware Verification has been such an Uphill Battle, What is the Future of Software Verification?” Panel position paper. *Proceedings of the Second ACM/IEEE International Conference on Formal Methods and Models for Co-Design (MEMOCODE 2004)*, pp. 157–158, San Diego, California, June 2004.
7. Tevfik Bultan. “Software Design From a Verification Perspective.” Position paper. *National Science Foundation Workshop, Science of Design: Software and Software-Intensive Systems*, Airlie Center, Herndon, Virginia, November 2003.
8. Tevfik Bultan. “A Composite Model Checking Toolset for Analyzing Software Systems.” Project summary, *ACM SIGSOFT Software Engineering Notes (SEN)*, vol. 25, no. 1, pp. 37–38, January 2000.

9. Tevfik Bultan and Cevdet Aykanat. “A Mean Field Annealing Algorithm for the Mapping Problem.” *Proceedings of the Intel Technology Focus Conference*, Timberline, Oregon, pp. 271–308, April 1992.

Invited Talks

“Service Choreography and Orchestration with Conversations,”

- Nineteenth International Conference on Concurrency Theory (CONCUR 2008), August 21, 2008.

“Infinite State Model Checking with Presburger Arithmetic,”

- First International Workshop on Numerical Abstractions for Software Verification, Princeton, NJ, July 8, 2008.
- Sixth ACM-IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE 2008) Anaheim, CA, June 6, 2008.

“Structuring Software for Verifiability,”

- University of California, Riverside, December 13, 2007.
- NEC Labs, Princeton, NJ, November 5, 2007.

“Modeling Interactions of Web Software,”

- Second International Workshop on Automated Specification and Verification of Web Systems (WWV 2006), Paphos, Cyprus, November 19, 2006.

“Analyzing Conversations of Web Services,”

- State University of New York at Stony Brook, December 2, 2005.

“Tools for Automated Verification of Web Services,”

- Naval Research Laboratory, Center for High Assurance Computer Systems, Washington, D.C., November 24, 2004.
- Second International Symposium on Automated Technology on Verification and Analysis (ATVA 2004), Taipei, Taiwan, November 1, 2004.
- Software Chat, Computer Science Department, University of Maryland, College Park, Maryland, September 27, 2004.
- Computer Science Department, Brown University, Providence, Rhode Island, July 9, 2004.
- Nokia Research Center, Boston, Massachusetts, July 12, 2004.
- Bell Laboratories, Lucent Technologies, Murray Hill, New Jersey, May 18, 2004.

“Automated Verification of Concurrent Software and Web Services,”

- Fraunhofer Center, College Park, Maryland, October 5, 2004.

“Tools for Automated Verification of Concurrent Software,”

- Naval Research Laboratory, Center for High Assurance Computer Systems, Washington, D.C., September 29, 2004.
- Department of Computer Science and Engineering, Michigan State University, East Lansing, Michigan, September 26, 2003.
- Department of Computer Science and Engineering, University of California, San Diego, California, August 18, 2003.

“Integrating Arithmetic Constraint Based Verification and Shape Analysis,”

- Dagstuhl Seminar on Deduction and Infinite-state Model Checking, Schloss Dagstuhl, Wadern, Germany, April 23, 2003.

“Tools for Specification, Verification, and Synthesis of Reactive Systems,”

- Computer Science Department, University of Massachusetts, Amherst, Massachusetts, March 25, 2002.
- Computer Science Department, State University of New York at Stony Brook, Stony Brook, New York, March 22, 2002.

“A Specification Language and a Verification Engine for Reliable Reactive Software Development,”

- School of Computer Science, Carnegie Mellon University, Pittsburgh, Pennsylvania, November 19, 2001.

“Automated Symbolic Analysis of Reactive Systems.”

- Computer Engineering and Information Science Department, Bilkent University, Ankara, Turkey, December, 1998.

“Symbolic Model Checking Systems with Unbounded Integer Variables.”

- Logic and Computation Seminar, University of Pennsylvania, Philadelphia, Pennsylvania, November 17, 1997.

“Model Checking Infinite State Systems: Recent Results and New Challenges.”

- Naval Research Laboratory, Center for High Assurance Computer Systems, Washington, D.C., September 29, 1997.

Invited Panels

National Science Foundation CAREER award review panel

Proof Tools Panel at the IFIP Working Conference on Verified Software: Theories, Tools, Experiments, ETH Zurich, Switzerland (2005)

National Science Foundation review panel (2001)

National Science Foundation review panel (2000)

Professional Activities

Editorship

Editorial Board Member, Service Oriented Computing and Applications Journal

Co-Editor, Proceedings of the Workshop on Testing, Analysis and Verification of Web Software (TAV-WEB 2008)

Editor, Proceedings of the Workshop on Testing, Analysis and Verification of Web Services and Applications (TAV-WEB 2006)

Technical Program Committee Chair, Co-Chair

Program Committee Co-Chair, Workshop on Testing, Analysis and Verification of Web Software (TAV-WEB 2008)

Program Committee Chair, Workshop on Testing, Analysis and Verification of Web Services and Applications (TAV-WEB 2006)

Program Committee Co-Chair, Workshop on Testing, Analysis and Verification of Web Services (TAV-WEB 2004)

Technical Program Committee Member

2009 ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2009)
6th International Conference on Service Oriented Computing (ICSOC 2008)
5th International Workshop on Formal Aspects of Component Software (FACS 2008)
23rd IEEE/ACM International Conference on Automated Software Engineering (ASE 2008)
6th ACM-IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE 2008)
14th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2008)
5th International Conference on Service Oriented Computing (ICSOC 2007)
4th International Workshop on Software Quality Assurance (SOQUA 2007)
22nd IEEE/ACM International Conference on Automated Software Engineering (ASE 2007)
5th ACM-IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE 2007)
IEEE International Conference on Service-Oriented Computing and Applications (SOCA 2007)
2007 ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2007)
2nd Automated Formal Methods Workshop (AFM 2007)
3rd International Workshop on Automated Specification and Verification of Web Systems (WWV 2007)
2nd International Workshop on Service Oriented Software Engineering (IW-SOSWE 2007)
1st International Workshop on Web Service Composition and Adaptation (WSCA 2007)
4th International Conference on Service Oriented Computing (ICSOC 2006)
International Workshop on Software Verification and Validation (SVV 2006)
International Workshop on Service Oriented Software Engineering (IW-SOSE 2006)
28th International Conference on Software Engineering, Emerging Results Track (ICSE 2006)
4th ACM-IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE 2006).
Dependability in Large-scale Service-oriented Systems (DILSOS 2006)
21st IEEE/ACM International Conference on Automated Software Engineering (ASE 2006)
International Workshop on Software Verification and Validation (SVV 2005)
3rd International Conference on Service Oriented Computing (ICSOC 2005)
20th IEEE/ACM International Conference on Automated Software Engineering (ASE 2005)
2005 IEEE International Conference on Web Services (ICWS 2005)

3rd ACM-IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE 2005)

Workshop on Software Model Checking (SoftMC 2005)

4th International Workshop on Automated Verification of Infinite-State Systems (AVIS 2005)

27th International Conference on Software Engineering (ICSE 2005)

International Workshop on Software Verification and Validation (SVV 2004)

Poster Committee Member, 13th International World Wide Web Conference (WWW 2004)

2nd International Symposium on Automated Technology for Verification and Analysis (ATVA 2004)

8th International Conference on Implementation and Application of Automata (CIAA 2003)

1st International Workshop on Automated Technology for Verification and Analysis (ATVA 2003)

2002 ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2002)

Organizing Committees

Co-organizer, Workshop on Testing, Analysis and Verification of Web Software (TAV-WEB 2008)

Organizing Committee Member, Workshop on Web quality, Verification and Validation (WQVV 2007)

Organizing Committee Member, Workshop on Testing, Analysis and Verification of Web Services and Applications (TAV-WEB 2006)

Panel Chair, Third ACM-IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE 2005)

Co-organizer, Workshop on Testing, Analysis and Verification of Web Services (TAV-WEB 2004)

Organizing Committee Chair, 8th International Conference on Implementation and Application of Automata (CIAA 2003)

Proposal Reviewer

Science Foundation Ireland proposal review (2007)

Netherlands Organization for Scientific Research proposal review (2005, 2006)

Nebraska EPSCoR First Award Grant Program proposal review (2005)

National Science Foundation proposal reviews (1999, 2000)

Journal Reviewer

ACM Transactions on the Web, ACM Transactions on Software Engineering and Methodology, ACM Transactions on Computational Logic, IEEE Transactions on Software Engineering, IEEE Transactions on Computers, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, IEEE/ACM Transactions on Networking, Journal of Computer and System Sciences, Automated Software Engineering Journal, International Journal on Software Tools for Technology Transfer, ACM Transactions on Computational Logic, Journal of Computer and System Sciences, Formal Methods in

System Design, Design Automation for Embedded Systems Journal, Information Processing Letters, Requirements Engineering Journal, Journal of Data and Knowledge Engineering, International Journal on Foundations of Computer Science, International Journal of Parallel and Distributed Systems and Networks.

Conference Reviewer

International Conference on Computer Aided Verification (CAV), International SPIN Workshop on Model Checking of Software (SPIN), International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), International Symposium on Software Testing and Analysis (ISSTA), International Conference on Software Engineering (ICSE), International Conference on Implementation and Application of Automata (CIAA), Annual IEEE Symposium on Logic in Computer Science (LICS), Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), IEEE International Conference on Software Engineering and Formal Methods (SEFM), Annual International Computer Software and Applications Conference (COMPSAC), International Conference on Distributed Computing Systems (ICDCS), IEEE Conference on Computer Assurance (COMPASS), Real-Time Systems Symposium (RTSS), Real-Time Technology and Applications Symposium (RTAS).

Professional Organizations

Member of the IEEE Computer Society

Member of the ACM SIGSOFT, SIGPLAN

Teaching and Advising Activities

Undergraduate Courses

Translation of Programming Languages: Winter 1999, Fall 1999, Fall 2000, Fall 2001, Winter 2004.

Software Engineering/Capstone Project: Winter 2000, Winter 2002, Winter 2003, Winter 2004, Winter 2006, Winter 2007, Winter 2008.

Graduate Courses

Automated Verification: Spring 1999, Spring 2000, Winter 2001, Fall 2002, Spring 2006, Spring 2008.

Static Analysis: Spring 2002, Spring 2004.

Software Engineering: Spring 2003, Spring 2007.

Concurrent Program Design and Verification: Spring 2000.

Graduate Seminars

Static String Analysis: Spring 2008

Architectural Support for Dynamic Software Analysis: Spring 2007

Environment Generation and Model Based Testing: Spring 2006.

Web Services and Security: Winter 2006.

Web Services: Spring 2003, Fall 2003.

Interfaces, Web Services and Verification: Winter 2003.

Topics in Automated Verification: Fall 2000, Spring 2002, Spring 2004.

Automated Verification of Infinite State Systems: Spring 1999, Fall 1999.

Workflow Specification Languages: Winter 1999.

Graduate Advisees

Fang Yu, Ph.D. candidate

Thesis topic: Scalable Software Verification

Graham Hughes, Ph.D. candidate

Thesis topic: Interface Grammars for Modular Software Verification

Muath Alkhalaf, M.S., 2008

Project title: Automated Web Service Testing Using Interface Grammars

Current position: PhD Student, UCSB

Chris Ferguson, M.S., 2008

Project title: Collaboration Diagram Analysis Toolkit

Current position: Student Information Systems and Technology, UCSB

Elliot Barlas, M.S., 2007

Project title: A Framework for Verification of Distributed Java Programs Using Java PathFinder

Current position: Citrix Online

Jennifer Choe, M.S., 2006

Project title: An Extended Finite State Machine Approach for Automated GUI Testing

Current position: Veeco Systems

Aysu Betin-Can, Ph.D., 2005

Thesis title: Design for Verification for Concurrent and Distributed Systems

Current position: Assistant Professor, Informatics Institute, Middle East Technical University, Ankara, Turkey.

Constantinos Bartzis, Ph.D., 2004

Thesis title: Symbolic Representations for Integer Sets in Automated Verification

Current position: Post Doctoral Fellow, Computer Science Department, Carnegie Mellon University.

Xiang Fu, Ph.D., 2004 (co-advised with Jianwen Su)

Thesis title: Formal Specification and Verification of Asynchronously Communicating Web Services

Current position: Assistant Professor, Department of Computer Science, Hofstra University

Tuba Yavuz-Kahveci, Ph.D., 2004

Thesis title: Specification and Automated Verification of Concurrent Software Systems

Current position: Research Scientist, Department of Computer and Information Science and Engineering, University of Florida, Gainesville

Zhe Dang, Ph.D., 2000 (co-advised with Richard A. Kemmerer)

Thesis title: Verification and Debugging of Infinite State Real-time Systems

Current position: Associate Professor, School of Electrical Engineering and Computer Science, Washington State University, Pullman

Undergraduate Projects

Elliot Barlas, Spring, Summer 2006, Project topic: Modular Verification of Distributed Programs

Thomas Wilson, Spring 2002, Project topic: Use of Assertions in Object Oriented Programming Languages

Christophe G. Joubert, Spring 2001, Project topic: Shape Analysis

University Service

University of California, Santa Barbara

2005–present, Vice Chair, Computer Science Department

2005–present, Graduate Advisor, Computer Science Department

2005–present, Graduate Affairs Committee Co-Chair, Computer Science Department

2005–present, Graduate Admissions Committee Co-Chair, Computer Science Department

2005–present, Teaching Coordinator, Computer Science Department

2006–present, Strategic Planning Committee, Computer Science Department

2006–2007, Acceleration Committee Member, Computer Science Department

1999–2004, Graduate Admissions Committee Member, Computer Science Department

2002–2004, Recruitment Committee Member, Computer Science Department

2000–2003, Curriculum Committee Member, Computer Science Department

2001–2002, Accreditation Committee Member, Computer Science Department

2000–2001, Academic Senate Representative, Computer Science Department

1998–2001, ACM Liaison, Computer Science Department

1998–1999, Library Liaison, Computer Science Department

1999–2000, Colloquium and Distinguished Lecture Series Coordinator, Computer Science Department

2006, Chair of the Committee on International Graduate Student Issues

2006, Packard Fellowship Nomination Review Committee Member

2006, NSF PIRE Grant Review Committee Member

2006–present, Teaching Coordinator, Computer Engineering Program

2006–2007, Graduate Curriculum and Affairs Committee, Computer Engineering Program

2005–2006, Seminar Series Committee Member, Computer Engineering Program

2005–2006, Student Awards Committee Member, Computer Engineering Program

1999–2004, Seminar Coordinator, Computer Engineering Program

2002–2004, Long Range Planning Committee Member, Computer Engineering Program

1999–2000, Recruitment Committee Member, Computer Engineering Program

University of Maryland, College Park

1996-1998, Student Representative for Graduate Admissions