

# Curriculum Vitae

Tuba Yavuz-Kahveci

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## Research Interests

Specification and automated verification of concurrent software systems, model checking, static analysis, software engineering.

## Degrees

Ph.D., Summer 2004, Computer Science, University of California, Santa Barbara, USA.  
Thesis: Specification and Automated Verification of Concurrent Software Systems.  
Advisor: Tevfik Bultan

M.S., August 1999, Computer Science, Bilkent University, Ankara, Turkey.  
Thesis: Indexing Motion for Video Databases.  
Advisor: Ozgur Ulusoy

B.S., June 1997, Computer Science, Bilkent University, Ankara, Turkey.

## Research Experience

**Research Scientist**, University of Florida, Fall 2005-current.

**Research Assistant**, University of California, Santa Barbara.

- Developed the Composite Symbolic Library (in C++) which is a symbolic manipulator for systems with heterogeneous data types. It combines different symbolic representations using a composite approach. Designed and implemented heuristics to improve performance of the Composite Symbolic Library.
- Developed Action Language Verifier (in C++) which is an infinite-state symbolic model checker. It is built on top of the Composite Symbolic Library. Its input specification language, Action Language, is a modular language for specifying behavior of reactive systems. Verified safety properties of a case study on Airport Ground Traffic Control.
- Proposed and implemented a technique for verifying structural invariant properties of concurrent linked lists.

- Designed and analyzed buffering algorithms for index structures.

**Research Assistant**, Bilkent University, Ankara, Turkey.

- Designed and implemented an index structure for moving objects in video databases.
- Studied several problems in information retrieval: text categorization and context-oriented query processing.

## Publications

### Journal Articles

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)*, vol. 5, no. 1, pp. 15-33, November 2003.

### Refereed Conference Papers

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)*.

Tuba Yavuz-Kahveci, Constantinos Bartzis, and Tevfik Bultan. “Action Language Verifier, Extended.” *Proceedings of the 17th International Conference on Computer Aided Verification (CAV 2005)*.

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, G. Puebla eds., LNCS 2477, pp. 69-84, Springer, Madrid, Spain, September 2002.

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, Via di Ripette, Rome, Italy, July 22-24, 2002.

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., LNAI 2309, pp. 57-71, Springer, Santa Margherita Ligure, Italy, April 8-10, 2002.

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., LNCS 2031, pp. 52-66, Springer, Genova, Italy, April 2001.

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.

Tuba Yavuz-Kahveci, Tamer Kahveci, and Ambuj Singh. “Buffering of Multimedia Index Structures.” The International Society for Optical Engineering (SPIE) - Internet Multimedia Management Systems, Boston, 2000.

Tuba Yavuz and H. Altay Guvenir. “An Application of K-Nearest Neighbor on Feature Projections Method to Text Categorization.” Proceedings of the 13th International Symposium on Computer and Information Sciences (ISCIS 98), Antalya, Turkey, October 26 - 28, 1998.

A. Pinar Saygin and Tuba Yavuz. “Query Processing in Context Oriented Retrieval of Information.” Proceedings of the 4th International Conference on Computer Science and Informatics (CS&I’98), Research Triangle Park, NC., U.S.A., October 23-28, 1998.

## Awards

National Science Foundation Educator’s Grant for the ACM/SIGSOFT Foundations of Software Engineering Conference (2004/FSE-12), Newport Beach, CA, USA, November 1-5, 2004.

Graduate Division Travel Grant awarded by University of California, Santa Barbara, 2002.

President’s Work Study Research Grant, 2000-present.

ACM SIGSOFT CAPS Grant for the 2002 ACM/SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2002), Via di Ripette, Rome, Italy, July 22-24, 2002.

Microsoft Grant for the 2002 ACM/SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2002), Via di Ripette, Rome, Italy, July 22-24, 2002.

## Presentations

“Specification, Verification, and Synthesis of Concurrency Control Components.” Presented in the 2002 ACM/SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2002), Via di Ripette, Rome, Italy, July 22-24, 2002.

“Heuristics for Efficient Manipulation of Composite Constraints.” Presented in the 4th International Workshop on Frontiers of Combining Systems (FroCoS 2002), Santa Margherita Ligure, Italy, April 8-10, 2002.

“A Library for Composite Symbolic Representations.” Presented in the 7th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2001), Genova, Italy, April 2001.

“Action Language Verifier.” Presented a poster in the 16th IEEE International Conference on Automated Software Engineering (ASE 2001), Coronado Island, California, November 2001.

## Teaching Experience

**Instructor**, University of Florida, Fall 2004-current. .

**Teaching Assistant**, University of California, Santa Barbara, 09/99-06/00. Assisted in teaching the courses Computer and Data Organizations and Programming Methods.

**Teaching Assistant**, Bilkent University, Ankara, Turkey, 09/97-06/98. Assisted in teaching the courses Introduction to Computer Systems and Automata Theory and Formal Languages.

## Work Experience

**Summer internship**, Texas Instruments, Santa Barbara, Summer 2001. Participated in the enhancement of the TI DSP Algorithm Standard under the supervision of Murat Karaorman.

## Professional Activities

Reviewer: IEEE Transactions on Software Engineering, International Journal on Software Tools for Technology Transfer, and International Symposium on Automated Technology for Verification and Analysis.

ACM, ACM SIGSOFT and ACM SIGPLAN member.

## References

Available upon request.