

# Ali Ebneenasir

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## Education

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### Michigan State University, Michigan, U.S.A.

PhD in Computer Science May 2005  
Dissertation title: Automatic Synthesis of Fault-Tolerance  
(*Nominated for the ACM Doctoral Dissertation Award*)

### Iran University of Science and Technology, Tehran, IRAN.

M.S. degree in Software Engineering February 1998  
Thesis title: Design and Implementation of a Java-Based Distributed Virtual Machine

### The University of Isfahan, Isfahan, IRAN.

B.S. degree in Computer Engineering September 1994  
*First-rank graduate amongst 60 students*  
Thesis title: An Intelligent Controller for D.C. Motors

## Research Interest

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Incremental Software Design, Automated Analysis and Design of Fault-Tolerance,  
Dependable and High Assurance Systems, Software Engineering, Distributed Computing

## Professional Experience

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**Assistant Professor** (Aug. 2006 – present)  
Department of Computer Science, Michigan Technological University.

**Postdoctoral Research Associate** (Aug. 2005 – Aug. 2006)

Software Engineering and Network Systems Laboratory  
Computer Science and Engineering Department, Michigan State University.  
Supervisor: Professor Betty Cheng

**Research problem.** Practical methods for modeling and analyzing fault-tolerance  
**Contributions.** Designed a methodology for modeling faults and fault-tolerance in UML  
towards developing a roundtrip software engineering framework for fault-tolerance.

**Graduate Research Assistant** (Feb. 2001 – Jul. 2005)  
Software Engineering and Network Systems Laboratory

Computer Science and Engineering Department, Michigan State University.

Advisor: Dr. Sandeep S. Kulkarni

**Research problem.** Automatic addition of fault-tolerance concerns to software systems

**Contributions.** Developed a theory for automatic addition of fault-tolerance concerns.

Developed an extensible software framework, called Fault-Tolerance Synthesizer (FTSyn).

FTSyn is being used and extended for pedagogical and research purposes

at MSU and at the University of Aachen (RWTH) in Germany.

### Chairperson

(Jun. 2000 – Dec. 2000)

Computer Science Department, Islamic Azad University, Majlesi Town, Isfahan, IRAN.

**Contributions.** Managed a department with 8 faculties, 280 undergraduate students.

Developed and taught new courses such as System Software, Analysis and Design of Software Systems, Development of Commercial Software.

### Manager of Hardware-Software Integration Team

(Jul. 1999 – Mar. 2000)

Electronic and Computer Research Center, The University of Isfahan, Isfahan, IRAN.

**Contributions.** Managed a team of 7 engineers in the design and implementation of industrial automation systems.

### R&D Engineer

(Sep. 1994 – Jan. 1997)

FARAJAST Electronic and Computer Research Group, Isfahan, IRAN.

**Contributions.** Designed and implemented several industrial automation systems.

### Honors and Awards

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Nominated for the ACM Doctoral Dissertation Award	2005
Dissertation Completion Fellowship Graduate School, Michigan State University.	2004
Graduate Office Fellowship, Michigan State University.	2004
IEEE Computer Society travel grant for attending ICDCS 2003	2003
Departmental Fellowship Computer Science and Engineering Department, Michigan State University.	2001
Honorary Admission to Graduate Program Computer Engineering Department, Iran University of Science and Technology, Tehran.	1996
First-rank Graduate Amongst 60 Students Computer Engineering Department at the University of Isfahan, Isfahan, IRAN.	1994

## Publications

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### Refereed journal papers:

- S. S. Kulkarni and **Ali Ebneenasir**. Complexity Issues in Automated Synthesis of Failsafe Fault-Tolerance. *IEEE Transactions on Dependable and Secure Computing*, 2(3):201-215, July-September 2005.
- S. S. Kulkarni and **Ali Ebneenasir**. The Effect of the Specification Model on the Complexity of Adding Masking Fault-Tolerance. *IEEE Transactions on Dependable and Secure Computing*, 2(4): 348-355, October-December 2005.

### Submitted journal papers and book chapter:

- **Ali Ebneenasir** and S. S. Kulkarni. FTSyn: A Framework for Automatic Synthesis of Fault-Tolerance. Submitted to *International Journal on Software Tools for Technology Transfer*.
- S. S. Kulkarni, Anish Arora and **Ali Ebneenasir**. Adding Fault-Tolerance to State Machine-Based Designs. Book chapter Submitted to *World Scientific Publishing Co. Pte. Ltd, Series on Software Engineering and Knowledge Engineering*.

### Refereed conference papers:

- **Ali Ebneenasir**, S. S. Kulkarni and B. Bonakdarpour. Revising UNITY Programs: Possibilities and Limitations. Appeared in *International Conference on Principles of Distributed Systems (OPODIS)*, 2005.
- S. S. Kulkarni and **Ali Ebneenasir**. Adding Fault-Tolerance Using Presynthesized Components. *Fifth European Dependable Computing Conference (EDCC-5)*, 2005, LNCS, Vol. 3463, p. 72.
- S. S. Kulkarni and **Ali Ebneenasir**. Automated Synthesis of Multitolerance. *International Conference on Dependable Systems and Networks (DSN)*, Florence, Italy, 2004.
- S. S. Kulkarni, B. Bonakdarpour and **Ali Ebneenasir**. Mechanical Verification of Automatic Synthesis of Fault-Tolerance. *International Symposium on Logic-based Program Synthesis and Transformation (LOPSTR)*, Verona, Italy, LNCS, Vol. 3573, Page 36-50, 2004.
- **Ali Ebneenasir** and S. S. Kulkarni. Hierarchical Presynthesized Component for Automatic Addition of Fault-Tolerance. In the poster abstracts of the *12th ACM SIGSOFT Workshop on Specification and Verification of Component-Based Systems (SAVCBS)*, Newport Beach, California, USA, 2004.
- S. S. Kulkarni and **Ali Ebneenasir**. Enhancing the Fault-Tolerance of Nonmasking Programs. In *Proceedings of the 23rd IEEE International Conference on Distributed Computing Systems (ICDCS) 2003* - Providence, Rhode Island, USA.
- S. S. Kulkarni and **Ali Ebneenasir**. The Complexity of Adding Failsafe Fault-Tolerance. In *proceedings of the 22nd IEEE International Conference on Distributed Computing Systems (ICDCS) 2002* - Vienna, Austria.

- **Ali Ebneenasir** and M. Sharifi. A Java-Based Distributed Virtual Machine. In proceedings of the 3rd International Conference of Computer Society of Iran, 23-25 Dec., 1997 - Tehran, Iran.

#### Refereed workshop papers:

- **Ali Ebneenasir**, Betty H.C. Cheng and Sascha Konrad. Use Case-Based Modeling and Analysis of Failsafe Fault-Tolerance. Poster and abstract appeared in International Conference on Requirements Engineering, Minneapolis, 2006.
- **Ali Ebneenasir** and Betty H.C. Cheng. Pattern-Based Modeling and Analysis of Failsafe Fault-Tolerance. Abstract appeared in International Conference on Dependable and Network Systems (DSN), Philadelphia, 2006.
- **Ali Ebneenasir** and S. S. Kulkarni. SAT-Based Synthesis of Fault-Tolerance. In the Fast Abstracts of the International Conference on Dependable Systems and Networks (DSN), Florence, Italy, June 28 - July 1, 2004.
- **Ali Ebneenasir**. Algorithmic Synthesis of Fault-Tolerant Distributed Programs. In proceedings of the Doctoral Symposium of the 23rd International Conference on Distributed Computing Systems (IEEE ICDCS), May 19-22, 2003, Providence, USA.

#### Technical reports:

- **Ali Ebneenasir** and S. S. Kulkarni. Efficient Synthesis of Failsafe Fault-Tolerant Distributed Programs. Technical report MSU-CSE-05-13, Department of Computer Science, Michigan State University East Lansing, Michigan, USA.
- **Ali Ebneenasir** and S. S. Kulkarni. Automatic Addition of Liveness. Technical report MSU-CSE-04-22, Department of Computer Science, Michigan State University East Lansing, Michigan, USA.
- S. S. Kulkarni, B. Bonakdarpour and **Ali Ebneenasir**. Mechanical Verification of Automatic Synthesis of Failsafe Fault-Tolerance. In the emerging trends of TPHOL 2004, a technical report of the Computer Science Department, the University of Utah.

#### Grant Writing Experience

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Collaborated with Dr. Kulkarni in writing two research proposals on theory and practice of automatic addition of fault-tolerance submitted to NSF and ONR.

#### Professional Activities

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Program committee member: Emerging Results of ICSE 2006	2005 - 2006
Reviewer (Journals): Journal of Distributed Computing	2003 - 2005
Reviewer (Journals): Iranian Journal of Electrical and Computer Engineering	2005
Reviewer (Conferences): IEEE ICDCS, DSN	2004
Reviewer (Conferences): IEEE ICDCS	2003

## Teaching Experience

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Instructor, Advanced Algorithms, Michigan Technological University	Fall 2006
Teaching assistant for CSE870 (Advanced Software Engineering) Computer Science and Engineering Department, Michigan State University.	Spring 2005
Substitute instructor for CSE870 (Advanced Software Engineering) Computer Science and Engineering Department, Michigan State University.	Spring 2005
Teaching assistant for CSE410 (Operating Systems). Computer Science and Engineering Department, Michigan State University.	Fall 2004
Substitute instructor for CSE260 (Discrete Math.) Computer Science and Engineering Department, Michigan State University.	March 2004
Lecturer in Computer Science Computer Science Department, Islamic Azad University, Majlesi Town, Isfahan, IRAN.	(June 2000 - Dec. 2000)
Lecturer in Computer Science Computer Science Department, Islamic Azad University, Majlesi Town, Isfahan, IRAN. Teaching the following undergraduate courses: System Software, Assembly Language, Principles of Operating Systems, and Programming.	(Sep. 1996 - June 1998)
Instructor and developer of microprocessor laboratory Computer Engineering Department, the University of Isfahan, Isfahan, IRAN.	(Jan. 1996 - June. 1996)

## Technical Presentations

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Dependability: from Requirements to Code. Michigan Technological University, USA.	2006
Automated Design of Fault-Tolerance. University of Missouri - Rolla, USA.	2005
Hierarchical Presynthesized Component for Automatic Addition of Fault-Tolerance. Poster workshop of the 12th ACM SIGSOFT SAVCBS Workshop, Newport Beach, California, USA.	2004
Mechanical Verification of Automatic Synthesis of Failsafe Fault-Tolerance Poster talk in TPHOL, Park City, Utah, USA.	2004
Automated Synthesis of Fault-Tolerance Poster workshop at the Computer Science and Engineering Department, Michigan State University, Michigan, USA.	2004

- Enhancing the Fault-Tolerance of Nonmasking Programs  
IEEE ICDCS, May 19-22, Providence, Rhode Island, USA. 2003
- Algorithmic Synthesis of Fault-Tolerant Distributed Programs  
Doctoral Symposium of IEEE ICDCS, May 19-22, Providence, USA. 2003

## References

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### **Betty H.C. Cheng, Professor**

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### **Sandeep S. Kulkarni, Assistant Professor**

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### **Laura K. Dillon, Professor**

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### **Anish Arora, Professor**

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