

Unmesh D. Bordoloi

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RESEARCH INTERESTS

- Schedulability analysis, hardware/software co-design and performance analysis of distributed real-time systems.
- General-Purpose computation on Graphics Processing Units, and Wireless and Sensor Networks.

EDUCATION

- **National University of Singapore (NUS)** Singapore
Ph.D., Computer Science Aug 2004 – July 2008 (expected)
Thesis Title: *Interactive Performance Debugging of Real-Time Embedded Systems.*
• **President's Graduate Fellowship** • **Sun Microsystems Fellowship** • **Invited journal papers**
- **National Institute of Technology (NIT)** Rourkela, India
Bachelor of Technology, Computer Science Engineering Aug 2000 – May 2004
First Class with Honors

WORK EXPERIENCE

- School of Computing, National University of Singapore Singapore
Teaching Assistant August-November, 2007
I advised undergraduate students in the Real Time Systems - Special Interest Group (SIG) to prepare proposals for their research projects. These projects were a part of the Special Program in Computing which is meant for students with outstanding academic performance.
- General Motors R&D, India Science Lab Bangalore
Intern January-March, 2007
My work focused on safety-critical applications in the automotive domain; in particular, applications distributed over a network of processors that communicate via a “FlexRay” bus. I developed techniques to (i) design extensible schedules for the FlexRay bus that are optimized with respect to metrics like buffer space, deadline miss costs etc. (ii) identify trade-offs with respect to metrics like power constrictions, memory constraints etc. in a distributed multiprocessor environment which typically arises in automotive electronics.
- Computer Department, National Institute of Technology, (NIT) Rourkela, India
Teaching Assistant March-April, 2003
I was the lab tutor for the C/C++ lab courses conducted for the teachers of NIT under the CEEP (Continuing Engineering Education Program) at NIT, Rourkela.
- Computer Department, Indian Institute of Technology Guwahati, India
Summer Intern May-June, 2003
I designed and simulated a 4 bit CPU using VHDL under the guidance of Dr J.K.Deka

- Brahma Putra Valley Fertilizer Corporation (B.V.F.C.L.) Namrup, India
Summer Training May-June, 2002
 I was a trainee at B.V.F.C.L., Namrup during which I was introduced to the automated and computerized 'Distributed Control System'.
- Department of Physics, Dibrugarh University Dibrugarh, India
Summer Intern May-June, 2001
 During my research project at Dibrugarh University, I explored the existence of chaotic behavior in a set of differential equations by realizing them as electronic circuits in the laboratory using op-amps.

AWARDS

- **Sun Microsystems Fellowship**, 2006-07 awarded to the best student in the entire department, in recognition of research and academic excellence.
- **President's Graduate Fellowship**, 2006-07 by the National University of Singapore in recognition of outstanding performance.
- **Scholar of Jagadish Bose National Talent Search Scholarship**, 1999.
 - Out of students of 7 states who had participated, only 15 were awarded the scholarship based on written exams and interviews.
- Awarded the Certificate of Merit for "outstanding performance and for being among the **top 0.1 percent** of successful candidates of AISSE (high school) '98 in Mathematics".
- Merit Certificate awarded under National Scholarship Scheme in recognition of high position secured in the list of meritorious candidates qualifying awards from AISSE (high school), 1998 by Director of Education (Govt. of National Capital Territory of Delhi).
- Secured **1st position** in order of merit in the state wide Science Talent Search Competition of 1999, organized by the Assam Science Society.

PUBLICATIONS

• Journals, Book Chapters, and Conference Papers

1. U. D. Bordoloi and S. Chakraborty. Interactive Schedulability Analysis. *ACM Transactions on Embedded Computing Systems (TECS)*.
2. U. D. Bordoloi and Samarjit Chakraborty. Interactive Schedulability Analysis. *IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)*, San Jose, April 2006. (**Invited** to a special issue of ACM Transactions on Embedded Computing Systems, **on selected best papers** from RTAS'06).
3. U. D. Bordoloi, S. Chakraborty, and A. Hagiescu. Performance Debugging of Heterogeneous Real-Time Systems. Book Chapter in *Next Generation Design and Verification Methodologies for Distributed Embedded Control Systems*, Springer Netherlands, 2007.
4. U. D. Bordoloi and S. Chakraborty. Performance Debugging of Real-Time Systems using Multicriteria Schedulability Analysis. *IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)*, Bellevue, Washington, April 2007.
5. A. Hagiescu, U. D. Bordoloi, S. Chakraborty, P. Sampath, P. V. V. Ganesan, and S. Ramesh. Performance Analysis of FlexRay-based ECU Networks. *Design Automation Conference (DAC)*, San Diego, June 2007.
6. J. Feng, S. Chakraborty, B. Schmidt, W. Liu, and U. D. Bordoloi. Fast Schedulability Analysis Using Commodity Graphics Hardware. *13th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA) (short paper)*, Daegu, Korea, August 2007.

7. S. Chakraborty, T. Mitra, A. Roychoudhury, L. Thiele, U. D. Bordoloi, and Cem Derdiyok. Cache-Aware Timing Analysis of Streaming Applications. *19th Euromicro Conference on Real-Time Systems (ECRTS)*, Pisa, Italy, July 2007.

PROGRAMMING SKILLS

Languages: C/C++, Java
GPGPU: Cg (with OpenGL)
Wireless Networks: nesC (TinyOS), Java (J2ME)
Tools: Matlab, Rhapsody (with C++)

SERVICES

- Regular Reviewer of Conference Submissions for:
 - Int'l Conference on Hardware Software Co-design and System Synthesis (CODES) 2007
 - Euromicro Conference on Real-Time Systems (ECRTS) 2007
 - Work in Progress Session, Euromicro Conference on Real-Time Systems (ECRTS) 2007
 - International Conference on Embedded Systems and Software, ICES 2007
 - ACM/SIGDA Ph.D. Forum at DAC 2006
 - International Conference on Parallel and Distributed Systems, ICPADS. 2006
 - Graduate Students' Society National University of Singapore
Director August 2007-present
As a representative of the entire graduate student population at NUS **(i)** met the official NUS bodies like Board of Graduate Studies, Career Center etc. to present student issues **(ii)** organized events for welfare of graduate students.
 - Department of Computer Science National Institute of Technology, Rourkela
Class Secretary August 2002- August 2003
As the representative of 200 departmental students collaborated with the faculty and staff to materialize an inter-university TechFest.
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COMMUNICATION SKILLS

- Excellent presentation and interpersonal skills.
 - Fluent in spoken and written English, Hindi and Assamese.
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EXTRA CURRICULAR

- Rotary Club Rourkela, India
Active Member 2000-02
- Won 1st prizes at inter-college **Quiz**, and **Folk Dance** competitions at NIT, Rourkela.
- Painting: Secured 1st division ANKAN VISHARAD in Painting from Nikhil Bharat Sangeet Samiti after passing its 5th year.

REFERENCES

Prof. Samarjit Chakraborty

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