



RTAS 2006

April 4 - April 7, 2006
San Jose, California, United States

Wednesday, April 5, 2006: All meetings in Crystal Room

8:00	Continental breakfast & registration
8:45-9:00	Welcome by symposium chairs
9:00-10:00	Keynote by Dr. Douglas C. Schmidt, Vanderbilt University <i>Meeting the Challenges of Ultra-Large-Scale Real-time Systems</i>
10:00-10:30	Coffee break
10:30-12:00 <u>Session 1: Real-Time Operating Systems</u>	<i>APPLICATION-SPECIFIC SERVICE TECHNOLOGIES FOR COMMODITY OPERATING SYSTEMS IN REAL-TIME ENVIRONMENTS</i> Richard West and Gabriel Parmer
Chair: John Regehr	<i>PREDICTABLE INTERRUPT MANAGEMENT FOR REAL TIME KERNELS OVER CONVENTIONAL PC HARDWARE</i> Luis E. Leyva-del-Foyo, Pedro Mejia-Alvarez, and Dionisio de Niz
	<i>MEMORY FOOTPRINT REDUCTION WITH QUASI-STATIC SHARED LIBRARIES IN MMU-LESS EMBEDDED SYSTEMS</i> Jaesoo Lee, Jiyong Park, and Seongsoo Hong
12:00-1:30	Lunch break
1:30-3:30 <u>Session 2: Resource Management</u>	<i>GRANULARITY AWARE (M,K) QUEUE MANAGEMENT FOR REAL-TIME MEDIA SERVERS</i> Yingxin Jiang and Aaron Striegel
Chair: Ying Lu	<i>FSF: A REAL-TIME SCHEDULING ARCHITECTURE FRAMEWORK</i> M. Aldea, G. Bernat, I. Broster, A. Burns, R. Dobrin, J. M. Drake, G. Fohler, P. Gai, M. González Harbour, G. Guidi, J.J. Gutiérrez, T. Lennvall, G. Lipari, J.M. Martínez, J.L. Medina, J.C. Palencia, M. Trimarchi
	<i>ZYGARIA: STORAGE PERFORMANCE AS A MANAGED RESOURCE</i> Theodore M. Wong, Richard Golding, Caixue Lin, and Ralph Becker-Szendy
	<i>METERG: MEASUREMENT-BASED END-TO-END PERFORMANCE ESTIMATION TECHNIQUE IN QOS-CAPABLE MULTIPROCESSORS</i> Jae W. Lee and Krste Asanovic, MIT Computer Science and Artificial Intelligence Laboratory (CSAIL), Cambridge, MA 02139, U.S.A.
3:30-4:00	Coffee break
4:00-5:30 <u>Session 3: Scheduling</u>	<i>INTERACTIVE SCHEDULABILITY ANALYSIS</i> Unmesh D. Bordoloi and Samarjit Chakraborty
Chair: Marco Di Natale	<i>UNIPROCESSOR SCHEDULING UNDER PRECEDENCE CONSTRAINTS</i> Leonardo Mangeruca, Massimo Baleani, Alberto Ferrari, Alberto Sangiovanni-Vincentelli
	<i>ON NON-UTILIZATION BOUNDS FOR ARBITRARY FIXED PRIORITY POLICIES</i> Xue Liu and Tarek Abdelzaher
6:30-8:30	Conference Banquet

**Thursday, April 6, 2006: Meetings in Empire (A Sessions) and Garden (B Sessions) Rooms
except the Joint ESC Panel, which is at the Civic Auditorium**

8:00 Breakfast & registration

8:30-10:30 Parallel Sessions

Session 4A: Distributed and Multiprocessor Scheduling

Chair: Dakei Zhu (Empire Room)

REAL-TIME SCHEDULING ON MULTICORE PLATFORMS
James H. Anderson, John M. Calandrino, UmaMaheswari C. Devi

*A DECOUPLED SCHEDULING APPROACH FOR DISTRIBUTED
REAL-TIME EMBEDDED AUTOMOTIVE SYSTEMS*
Shengbing Jiang

*TASK PARTITIONING WITH REPLICATION UPON
HETEROGENEOUS MULTIPROCESSOR SYSTEMS*
Sathish Gopalakrishnan and Marco Caccamo

*ADAPTIVE ALLOCATION OF SOFTWARE AND HARDWARE
REAL-TIME TASKS FOR FPGA-BASED EMBEDDED SYSTEMS*
Rodolfo Pellizzoni and Marco Caccamo

Session 4B: Design and Development

Chair: Vana Kalogeraki (Garden Room)

*INCORPORATING SCENARIOS AND HEURISTICS TO IMPROVE
FLEXIBILITY IN REAL-TIME EMBEDDED SYSTEMS*
Iain Bate and Paul Emberson

*MODEL-BASED DEVELOPMENT OF EMBEDDED SYSTEMS: THE
SYSWEAVER APPROACH*
Dionisio de Niz, Gaurav Bhatia, and Raj Rajkumar

*INTERFACE-BASED DESIGN OF REAL-TIME SYSTEMS WITH
HIERARCHICAL SCHEDULING*
Ernesto Wandeler and Lothar Thiele

AN INTERFACE ALGEBRA FOR REAL-TIME COMPONENTS
Thomas A. Henzinger, Slobodan Matic

10:30-11:00 Coffee Break

11:00-12:00 ESC Floor Exhibits or Sponsored Seminars at Convention Center

12:00-1:30 Lunch break

1:30-3:00 Parallel Sessions

Session 5A: Sensor Networks

Chair: Hakan Aydin (Empire Room)

*ACHIEVING REAL-TIME TARGET TRACKING USING WIRELESS
SENSOR NETWORKS*
Tian He, Pascal A. Vicaire, Ting Yan, Liqian Luo, Lin Gu, Gang Zhou,
Radu Stoleru, Qing Cao, John A. Stankovic and Tarek Abdelzaher

*SCALABLE MODELING AND PERFORMANCE EVALUATION OF
WIRELESS SENSOR NETWORKS*
YoungMin Kwon and Gul Agha

*IMPACT OF UPPER LAYER ADAPTATION ON END-TO-END
DELAY MANAGEMENT IN WIRELESS AD HOC NETWORKS*
Wenbo He and Klara Nahrstedt

Session 5B: Worst Case Execution Analysis

Chair: Chris Healy (Garden Room)

*BOUNDING PREEMPTION DELAY WITHIN DATA CACHE
REFERENCE PATTERNS FOR REAL-TIME TASKS*
Harini Ramaprasad, Frank Mueller

*ESTIMATING THE WORST-CASE EXECUTION ENERGY OF
EMBEDDED SOFTWARE*
Ramkumar Jayaseelan, Tulika Mitra, Xianfeng Li

*INTERRUPT TRIGGERED SOFTWARE PREFETCHING FOR
EMBEDDED CPU INSTRUCTION CACHE*
Ken W. Batcher and Robert A. Walker

3:00-3:30 Coffee Break

3:30-5:00 Parallel Sessions

Session 6A: Real-Time Communication

Chair: Tarek Abdelzaher (Empire Room)

*SWITCH SCHEDULING AND NETWORK DESIGN FOR REAL-TIME
SYSTEMS*
Sathish Gopalakrishnan, Marco Caccamo and Lui Sha

*MESSAGE REORDERING FOR THE REUSE OF CAN-BASED
LEGACY APPLICATIONS IN A TIME-TRIGGERED
ARCHITECTURE*
R. Obermaisser

*NETWORK-CODE MACHINE: PROGRAMMABLE REAL-TIME
COMMUNICATION SCHEDULES*
Sebastian Fischmeister, Oleg Sokolsky, Insup Lee

Session 6B: Modeling

Chair: Alastair Reid (Garden Room)

*SCHEDULING ANOMALY DETECTION AND OPTIMIZATION FOR
DISTRIBUTED SYSTEMS WITH PREEMPTIVE TASK-SETS*
Razvan Racu and Rolf Ernst

*OPTIMIZING THE MULTITASK IMPLEMENTATION OF MULTIRATE
SIMULINK MODELS*
Marco Di Natale

*A SEMANTIC UNIT FOR TIMED AUTOMATA BASED MODELING
LANGUAGES*
Kai Chen, Janos Sztipanovits and Sherif Abdelwahed

5:00-5:30 Short Break to walk to the Civic Auditorium for the Joint ESC Panel

5:30-6:30
Session 7: Joint ESC
Panel at the
Civic Auditorium

Win-Win Partnership of Academia and Industry: Why Should We Care? Where Is Our Common Future?
Moderator: Steve Liu, Panelists: Greg Bollella (Sun), Helen Gill (NSF), Frank Mueller (North Carolina State), and Alastair Reid (ARM), Douglas Schmidt (Vanderbilt), and Douglas Stuart (Boeing)

Friday, April 7, 2006: All meetings in Crystal Room

8:00 Breakfast & Registration

8:30-9:30
Session 8: Multimedia
Performance Analysis
Chair: Marco Caccamo

A PERFORMANCE ESTIMATION TOOL FOR VIDEO APPLICATIONS
Zhengting He, Cheng Peng, Aloysius K. Mok

STATISTICAL PERFORMANCE ANALYSIS OF COARSE GRAIN PARALLEL MULTIMEDIA PROCESSING SYSTEM
Min Li, Tanja Van Achteren, Erik Brockmeyer, Francky Catthoor

9:30-10:00 Coffee break

10:00-12:00 Work In Progress

Session 9: Work In
Progress
WIP Chair: Iain Bate
Session Chair: Ying Lu

See WIP proceedings for paper titles and authors.

12:00-1:30 Lunch break

1:30-3:00
Session 10: Embedded
and Real-Time
Technologies
Chair: Michael Gonzalez
Harbour

ROS-DMA: A DMA DOUBLE BUFFERING METHOD FOR EMBEDDED IMAGE PROCESSING WITH RESOURCE-OPTIMIZED SLICING
Christian Zinner and Wilfried Kubinger

WAIT-FREE QUEUE ALGORITHMS FOR THE REAL-TIME JAVA SPECIFICATION
Philippas Tsigas, Yi Zhang, Daniel Cederman, Tord Dellsen

REAL-TIME JAVA IN AVIONICS APPLICATIONS
Jason Baker, Antonio Cunei, Chapman Flack, Filip Pizlo, Marek Prochazka, Jan Vitek, Austin Ambruster, Edward Pla, David Holmes

3:00-3:30 Coffee break

3:30-5:00
Session 11: Energy
Awareness
Chair: Scott Brandt

RELIABILITY-AWARE DYNAMIC ENERGY MANAGEMENT IN DEPENDABLE EMBEDDED REAL-TIME SYSTEMS
Dakai Zhu

LEAKAGE-AWARE ENERGY-EFFICIENT SCHEDULING OF REAL-TIME TASKS IN MULTIPROCESSOR SYSTEMS
Jian-Jia Chen and Heng-Ruey Hsu and Tei-Wei Kuo

ENERGY-EFFICIENT REAL-TIME HETEROGENEOUS SERVER CLUSTERS
Cosmin Rusu, Alexandre Ferreira, Claudio Scordino, Aaron Watson, Rami Melhem and Daniel Mosse

5:00 Concluding Remarks



Wyndham Hotel
 1350 North 1st St.
 San Jose, CA 95112
 (408) 453-6200

Fairmont Hotel
 170 S. Market St.
 San Jose, CA 95113
 (408) 998-1900

Light Rail Information: Stations, Schedules & Fares

Gish Station - Nearest Station to the Wyndham Hotel

Southbound Route 901 will leave this station approximately every quarter hour (beginning before 6:00 am)
 Split platforms in the median of First Street, northbound platform is located north of Gish Road, southbound platform is located south of Gish Road.
 Connecting Bus Routes: None

Paseo de San Antonio Station - Nearest Station to the Fairmont Hotel

Northbound Route 901 will leave this station approximately every quarter hour (beginning before 6:00 am)
 Northbound platform is located on First Street at Paseo de San Antonio. Southbound platform is located on Second Street at Paseo de San Antonio.
 Connecting Bus Routes: 23, 63, 65, 66, 68, 72, 73, 81, 82, 85, 304, 305, Downtown Area Shuttle (DASH)

Both route 901 (Alum Rock to Santa Teresa) and route 902 (Mountain View to Winchester) serve the two stations, but 902 arrives more closely to the quarter hour.

Single Ride

Adult	\$1.75
Youth (5 - 17 years)	\$1.50
*Senior/Disabled/Medicare	75¢

Day Pass

Adult	\$5.25
Youth (5 - 17 years)	\$4.50
*Senior/Disabled/Medicare	\$2.25

Day Pass Tokens (Bag of 5)

Adult	\$23.60
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Day Passes are good for unlimited rides on VTA and can be purchased from your bus operator or light rail ticket vending machines.