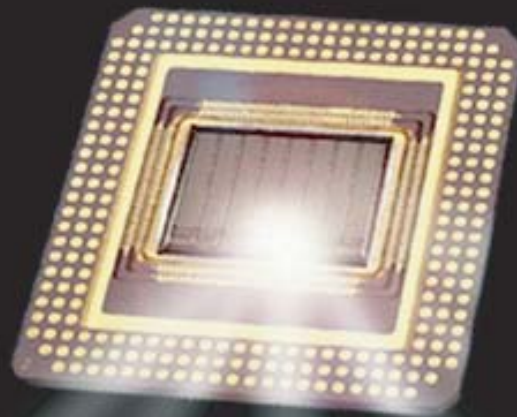




Sixth Annual
**High Performance
Embedded Computing
Workshop**

24-26 September 2002

Presenter's Package



HPEC 2002
High Performance Embedded Computing



LINCOLN LABORATORY
Massachusetts Institute of Technology

Presentation Guidelines

The workshop sponsors and participants appreciate clear and legible presentations. In addition, the presentations themselves will constitute the published proceedings. Therefore, presenters are required to submit charts of the highest quality. Toward the goal of consistent quality and legibility, we ask that presenters adhere to the following guidelines when preparing their viewgraphs and posters.

VIEWGRAPHS AND POSTERS

Typeface

- Set regular text using a bold 18-point font. A bold sans serif font such as Helvetica is preferred for its readability in a large auditorium.
- Other sized fonts may be used as necessary, such as bold 24-point for titles, bold 16-point for sub-points, etc. However, do not use a font size smaller than 14-point, and always use bold fonts.

Format

- Visually center all viewgraphs within a 9" by 7" area, with at least a 1/4-inch margin inside the frame.
- Orient the viewgraphs horizontally (landscape).
- Limit your viewgraphs to 10 lines of text. Wider comprehension is aided by succinct visuals.

Posters

- Total poster area: 4' tall by 6' wide. This space will be arranged as two 4' x 3' felt-covered boards placed side by side.
- Total available area: 3' 6" tall by 6' wide. The title banner will consume the top six inches of the poster area. Lincoln Laboratory will be providing a title banner with the poster title, name(s) of the author(s), and the author affiliation(s).
- Recommended poster panel size: 11" tall by 15" wide. Authors should enlarge 8.5" x 11" panels by 30% to arrive at the final 11" x 15" panels. The poster panels must be oriented horizontally (landscape).
- A single 4' x 3' board fits 8 - 8 ½" x 11" poster panels or 6 - 11" x 15" poster panels.
- Poster panels must be mounted on a firm background such as foam core.
- Lincoln Laboratory will provide pins or velcro to facilitate mounting the poster panels on the felt-covered poster boards.

GRAPHICAL MATERIAL

Graphs and Tables

- Use 2-point rules for curves. Do not use line widths smaller than 1-point anywhere on graphs or tables.
- The same rules for fonts above apply to text within all graphs and tables. It is recommended that axis labels and table headings be set with at least a 16-point font.

Images

- Ensure that all images such as photographs, artwork, etc., can be photocopied legibly. High contrast images are more easily reproduced.
- Ensure that all text appearing in the image is large and legible.

PRESENTATION FORMAT

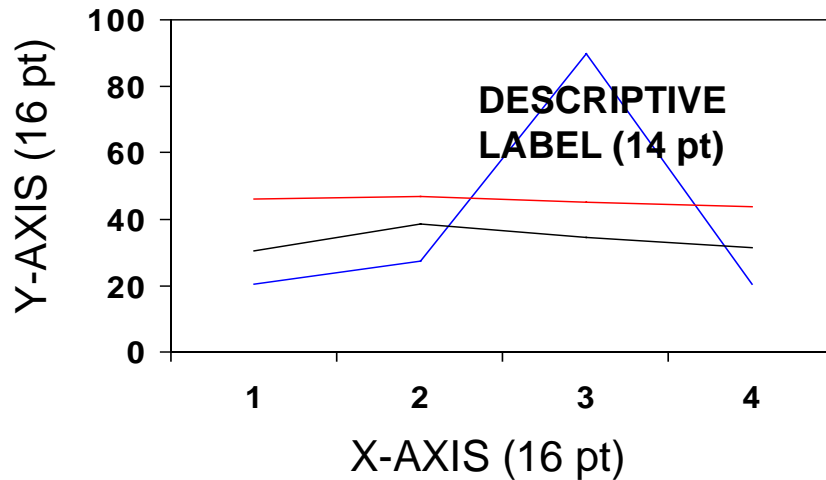
- A professional projectionist will display viewgraphs on a large screen behind the speaker. Speakers are provided with a podium, microphone, laser pointer, and a queuing button for the projectionist.
- To assist the projectionist, electronic presentations should be in Microsoft Power Point. If you will be using hard-copy format, all viewgraphs should be placed within frames and clearly numbered.
- For non-viewgraph visuals, please contact Ms. Jane Daneu at (781) 981-4842 to make arrangements. Electrical outlets and a 5' x 3' table can be provided for demonstrations. If you are planning a demonstration, please contact Ms. Jane Daneu by 23 August 2002 so we can prepare the facility.

SAMPLE SLIDE



TITLE IS SET IN SIZE 24 POINT

- THE FIRST LEVEL OF TYPE IS SET IN 18 POINT
 - THE SECOND LEVEL OF TYPE IS SET IN 16 POINT
 - THE THIRD LEVEL OF TYPE IS SET IN 14 POINT
- GRAPHICS EXAMPLES



Table

16 pt		
14 pt		

ABSTRACT DISCLOSURE AUTHORIZATION FORM

FOR PUBLIC DOMAIN SESSIONS

Sixth Annual Workshop on High Performance Embedded Computing (HPEC 2002)
MIT Lincoln Laboratory
Attn: Jane Daneu
244 Wood Street, Room C-385
Lexington, MA 02420-9108
phone: (781) 981-4842
fax: (781) 981-2517

Do not use this form for closed / limited sessions.

This completed form must be received by 30 August 2002 for inclusion in the abstract booklet, the proceedings document and on the MIT Lincoln Laboratory World Wide Web. Unless this form is received prior to presentation, the abstract must be omitted.

PART I: TO BE COMPLETED BY AUTHOR

Title of presentation:
Author(s):
Name of organization:
Address:
Telephone:
Classification: UNCLASSIFIED
Based on IR&D? Yes No
Presentation cleared for public release by: Case #

PART II: TO BE COMPLETED BY A CERTIFYING OFFICIAL *

Disclosure authorization is not required for this presentation because (check one only):
no government funds are involved, or
presentation is under fundamental research under 6.1 funding
I hereby authorize oral disclosure of this presentation at the above Workshop and publication of the information in the Workshop proceedings.
Unclassified presentation by DoD personnel.
Unclassified contractor presentation of material not related to work under DoD contract.

Sponsoring Agency Certifying Official †
(typ)
(signed)
Telephone Date Title

* For U.S. Government employee presentations - Agency Security Manager or Department Head
† For contractor employee Presentations - User Agency Contract Monitor, Security Manager, or other Cognizant U.S. Government Official

FOR PUBLIC DOMAIN SESSIONS

see instructions on reverse side

Instructions for the Disclosure Authorization Form

The Security Office of MIT Lincoln Laboratory has been assigned responsibility for disclosure authorization procedures for the HPEC 2002 Workshop. Both DoD and Industrial Security Regulations require written authorization for oral presentations or publication of materials. Disclosure authorization is required for unclassified contractor papers relating to work done under DoD contracts.

The Disclosure Authorization form consists of two parts:

Part I: Basic information about the presentation to be completed by all presenters

Part II: Disclosure authorization disclaimer

This Disclosure Authorization Form will be used for the written abstract. The completed Disclosure Authorization Form must be received by MIT Lincoln Laboratory by 30 August 2002. Please note that it can take six weeks or more to receive disclosure authorization from your sponsor after the abstract is prepared. No abstracts will be permitted without proper authorization.

It is emphasized that disclosure authorization must be provided for all papers relating to work done under DoD contracts. The certifying official must in all cases be a U.S. Government employee representing the author's agency or the appropriate user agency.

Instructions for Part I

If the research being presented is based on IR&D (internal research and development) or academic funding, mark "yes" here and sign here. Otherwise, please provide the name of the office or agency providing the clearance for public release and the case number associated with the abstract and presentation.

Instructions for Part II

If the research being presented is based on academic funding, or is based on fundamental research under 6.1 funding, please check the appropriate line and skip the remainder of Part II.

If the research being presented involves government funds and is not fundamental research under 6.1 funding, select either "Unclassified presentation by DoD personnel" or "Unclassified contractor presentation of material not related to work under DoD contract", and complete the remainder of Part II.

ABSTRACT DISCLOSURE AUTHORIZATION FORM
FOR PUBLIC DOMAIN SESSIONS
Sixth Annual Workshop on High Performance Embedded Computing (HPEC 2002)
MIT Lincoln Laboratory
Attn: Jane Daneu
244 Wood Street, Room C-385
Lexington, MA 02420-9108
phone: (781) 981-4842
fax: (781) 981-2517

Do not use this form for closed / limited sessions.

This completed form must be received by 30 August 2002 for inclusion in the abstract booklet, the proceedings document and on the MIT Lincoln Laboratory World Wide Web. Unless this form is received prior to presentation, the abstract must be omitted.

PART I: TO BE COMPLETED BY AUTHOR

Title of presentation: _____
Author(s): _____
Name of organization: _____
Address: _____
Telephone: _____
Classification: **UNCLASSIFIED**
Based on IR&D? Yes No
Presentation cleared for public release by: _____ Case # _____

PART II: TO BE COMPLETED BY A CERTIFYING OFFICIAL*

Disclosure authorization is not required for this presentation because (check one only):
 no government funds are involved, or
 presentation is under fundamental research under 6.1 funding

I hereby authorize oral disclosure of this presentation at the above Workshop and publication of the information in the Workshop proceedings.
 Unclassified presentation by DoD personnel.
 Unclassified contractor presentation of material not related to work under DoD contract.

Sponsoring Agency _____ Certifying Official † _____ (typed)
_____ (signed)
Telephone _____ Date _____ Title _____

* For U.S. Government employee presentations - Agency Security Manager or Department Head
† For contractor employee Presentations - User Agency Contract Monitor, Security Manager, or other Cognizant U.S. Government Official

FOR PUBLIC DOMAIN SESSIONS

pif-2956a see instructions on reverse side MIT LINCOLN LABORATORY

PRESENTATION / POSTER DISCLOSURE AUTHORIZATION FORM

FOR PUBLIC DOMAIN SESSIONS

Sixth Annual Workshop on High Performance Embedded Computing (HPEC 2002)
MIT Lincoln Laboratory
Attn: Jane Daneu
244 Wood Street, Room C-385
Lexington, MA 02420-9108
phone: (781) 981-4842
fax: (781) 981-2517

Do not use this form for closed / limited sessions.

This completed form must be received by 6 September 2002 for presentation at the Workshop and for inclusion in the proceedings document and on the MIT Lincoln Laboratory World Wide Web. Unless this form is received prior to presentation, the presentation must be cancelled.

PART I: TO BE COMPLETED BY AUTHOR

Title of presentation:
Author(s):
Name of organization:
Address:
Telephone:
Classification: UNCLASSIFIED
Based on IR&D? Yes No
Presentation cleared for public release by: Case #

PART II: TO BE COMPLETED BY A CERTIFYING OFFICIAL *

Disclosure authorization is not required for this presentation because (check one only):
no government funds are involved, or
presentation is under fundamental research under 6.1 funding
I hereby authorize oral disclosure of this presentation at the above Workshop and publication of the information in the Workshop proceedings.
Unclassified presentation by DoD personnel.
Unclassified contractor presentation of material not related to work under DoD contract.
Sponsoring Agency Certifying Official †
Telephone Date Title

* For U.S. Government employee presentations - Agency Security Manager or Department Head
† For contractor employee Presentations - User Agency Contract Monitor, Security Manager, or other Cognizant U.S. Government Official

FOR PUBLIC DOMAIN SESSIONS

see instructions on reverse side

Instructions for the Disclosure Authorization Form

The Security Office of MIT Lincoln Laboratory has been assigned responsibility for disclosure authorization procedures for the HPEC 2002 Workshop. Both DoD and Industrial Security Regulations require written authorization for oral presentations or publication of materials. Disclosure authorization is required for unclassified contractor papers relating to work done under DoD contracts.

The Disclosure Authorization form consists of two parts:

Part I: Basic information about the presentation to be completed by all presenters

Part II: Disclosure authorization disclaimer

This Disclosure Authorization Form will be used for the presentation and the proceedings document. The completed Disclosure Authorization Form must be received by MIT Lincoln Laboratory by 6 September 2002. Please note that it can take six weeks or more to receive disclosure authorization from your sponsor after the presentation is prepared. No presentations will be permitted without proper authorization.

It is emphasized that disclosure authorization must be provided for all papers relating to work done under DoD contracts. The certifying official must in all cases be a U.S. Government employee representing the author's agency or the appropriate user agency.

Instructions for Part I

If the research being presented is based on IR&D (internal research and development) or academic funding, mark "yes" here and sign here. Otherwise, please provide the name of the office or agency providing the clearance for public release and the case number associated with the abstract and presentation.

Instructions for Part II

If the research being presented is based on academic funding, or is based on fundamental research under 6.1 funding, please check the appropriate line and skip the remainder of Part II.

If the research being presented involves government funds and is not fundamental research under 6.1 funding, select either "Unclassified presentation by DoD personnel" or "Unclassified contractor presentation of material not related to work under DoD contract", and complete the remainder of Part II.

PRESENTATION / POSTER DISCLOSURE AUTHORIZATION FORM
FOR PUBLIC DOMAIN SESSIONS
Sixth Annual Workshop on High Performance Embedded Computing (HPEC 2002)
MIT Lincoln Laboratory
Attn: Jane Daneu
244 Wood Street, Room C-385
Lexington, MA 02420-9108
phone: (781) 981-4842
fax: (781) 981-2517

Do not use this form for closed / limited sessions.

This completed form must be received by 6 September 2002 for presentation at the Workshop and for inclusion in the proceedings document and on the MIT Lincoln Laboratory World Wide Web. Unless this form is received prior to presentation, the presentation must be cancelled.

PART I: TO BE COMPLETED BY AUTHOR

Title of presentation: _____
Author(s): _____
Name of organization: _____
Address: _____
Telephone: _____
Classification: **UNCLASSIFIED**
Based on IR&D? Yes No
Presentation cleared for public release by: _____ Case # _____

PART II: TO BE COMPLETED BY A CERTIFYING OFFICIAL*

Disclosure authorization is not required for this presentation because (check one only):
 no government funds are involved, or
 presentation is under fundamental research under 6.1 funding

I hereby authorize oral disclosure of this presentation at the above Workshop and publication of the information in the Workshop proceedings.
 Unclassified presentation by DoD personnel.
 Unclassified contractor presentation of material not related to work under DoD contract.

Sponsoring Agency _____ Certifying Official † _____ (typed)
_____ (signed)
Telephone _____ Date _____ Title _____

* For U.S. Government employee presentations - Agency Security Manager or Department Head
† For contractor employee Presentations - User Agency Contract Monitor, Security Manager, or other Cognizant U.S. Government Official

FOR PUBLIC DOMAIN SESSIONS

pff-2956a see instructions on reverse side **MIT LINCOLN LABORATORY**

PRESENTATION / POSTER DISCLOSURE AUTHORIZATION FORM

FOR CLOSED / LIMITED

Sixth Annual High Performance Embedded Computing Workshop (HPEC 2002)
MIT Lincoln Laboratory
Attn: Jane Daneu
244 Wood Street
Lexington, MA 02420-9108
phone: (781) 981-4842
fax: (781) 981-2517

Do not use this form for public domain materials.

This completed form must be received by 6 September 2002 for oral presentation at the Workshop. Unless this form is received prior to presentation, the presentation will be cancelled.

PART I: TO BE COMPLETED BY AUTHOR

Title of presentation:
Author(s):
Name of organization:
Address:
Telephone:
Classification:
Based on IR&D? Yes No

PART II: TO BE COMPLETED BY A CERTIFYING OFFICIAL *

(For classified presentations and unclassified/limited presentations relating to work done under classified contracts.)

I hereby authorize oral disclosure of this presentation at the above Workshop.

Overall classification of the presentation is:
Classified papers should be marked:

Classified by:
Declassify on:

Sponsoring Agency Certifying Official †
(typed)
(signed)

Telephone Date Title

* For U.S. Government employee presentations - Agency Security Manager or Department Head
† For contractor employee Presentations - User Agency Contract Monitor, Security Manager, or other Cognizant U.S. Government Official

FOR CLOSED / LIMITED SESSIONS

see instructions on reverse side

PRESENTATION / POSTER AUTHORIZATION FORM

Copyright Release High Performance Embedded Computing 2002 Workshop

24-26 September 2002
Lincoln Laboratory
Massachusetts Institute of Technology

Send completed form to:
Ms. Jane Daneu
MIT Lincoln Laboratory
244 Wood Street / Room C-385
Lexington, MA 02420-9108
Tel: 781-981-4842 | Fax: 781-981-2517

Whereas MIT Lincoln Laboratory is the publisher of the Abstract Booklet and the Proceedings of the High Performance Embedded Computing 2002 (HPEC) Workshop, and the undersigned is the Author of an abstract and presentation/poster at that Workshop entitled:

The Author hereby grants permission to MIT Lincoln Laboratory to publish that abstract in the Abstract Booklet and the presentation/poster in the Proceedings. Said Abstract Booklet and Proceedings will be printed for limited distribution controlled by MIT Lincoln Laboratory. The Author hereby represents that the above granted permission is not in conflict with or a violation of any previously issued permissions or copyrights to that material. If previous copyrights have been granted, the Author attaches hereto permission of the copyright holder for this publication and the necessary information for credit lines.

The Author retains all rights to said material in accordance with U.S. Code Title 17, Copy rights, revised to 1 January 1978.

The Author shall receive no payment from MIT Lincoln Laboratory for use of this material.

If Author is an employee of the U.S. Government (including the military), please check one:

_____ This material was prepared as part of my official duties for the U.S. Government.

_____ This material was prepared on my own volition, outside my official duties for the U.S. Government.

Approved and Accepted:

AUTHOR:

(signature)

(typed or printed name)

DATE:

High Performance Embedded Computing 2002 Workshop

24-26 September 2002
Lincoln Laboratory
Massachusetts Institute of Technology

Author Deadlines

Please submit the following information and materials to:

Ms. Jane Daneu
Attn: HPEC 2002
MIT Lincoln Laboratory
244 Wood Street, Room C-385
Lexington, MA 02420-9108
Voice: (781) 981-4842
Fax: (781) 981-2517
E-Mail: hpec@ll.mit.edu

By 23 August, 2002

- Name of Presenter

By 30 August, 2002

- Electronic version of the presentation viewgraphs or poster panels in Microsoft PowerPoint format
- Authorization to Publish for the abstract in the Abstract Booklet

By 6 September, 2002

- Copyright Release Form for both the abstract and the presentation viewgraphs/poster panels
- Authorization to Publish for the presentation viewgraphs/poster panels in the Proceedings

<p>If the above information and materials are not received by these deadlines, the abstract and the presentation/poster cannot be included in the Workshop Abstract Booklet and Proceedings.</p>

Please make sure you submit all appropriate information and materials according to the deadline schedule.

- Name of Presenter**
- Electronic Version of presentation viewgraphs or poster panels (PowerPoint format)**
- Authorization Disclosure Form to publish the abstract in the Abstract Booklet**
- Authorization Disclosure Form to publish the presentation viewgraphs/poster panels in the Proceedings**
- Copyright Release Form**

Please submit all appropriate information and materials to:

Ms. Jane Daneu
Attn: HPEC 2002
MIT Lincoln Laboratory
244 Wood Street, Room C-385
Lexington, MA 02420-9108
Voice: (781) 981-4842
Fax: (781) 981-2517
E-Mail: hpec@ll.mit.edu

Instructions For Foreign National Attendees

This is a reminder to our foreign national guests attending the HPEC Workshop on 24-26 September 2002. You should begin the paperwork for your visit to Lincoln Laboratory immediately. As outlined in the attached procedure you must first contact your embassy. If you have any questions regarding the procedure please contact the Security Office at Lincoln Laboratory (phone: 01-781-981-2402).

The following outlines the process used for DoD foreign national visits.

1. Visitor contacts their embassy in Washington, D.C. Visitor must justify the visit and the need for government-to-government interaction. This is done by producing an invitation for the visit or attendance at meeting/conference and/or explaining the need to process an official DoD visit request because of Lincoln Laboratory's physical location on Hanscom Air Force Base. Although not necessary, it is recommended that the visitor work within the Air Ministry liaison at their embassy.
2. Embassy official enters request for visit in DoD FORDTIS system. If the embassy is not on-line with FORDTIS, they should use the manual process. In both cases the request should be addressed to USAF, SAF/IA. The request should contain the following information:
 - a. Cage Code for MIT/LL [3G050]
 - b. Mailing address: 244 Wood Street, Lexington, MA 02420-9108
 - c. Fax No. (781) 981-0110
 - d. Tel No. (781) 981-2402
 - e. Visit Point of Contact: Foreign Visits Staff
 - f. Tel. No. (781) 981-2402
 - g. Visit Dates
 - h. Anticipated level of classified information to be involved: This is marked UNCLASSIFIED, unless a special project has been approved and appropriate bilateral security agreements exist.
 - i. Purpose of Visit: Specific justification added here.
 - j. Embassy Remarks: Additional remarks as required.
 - k. U.S. Equipment: Add text concerning any U.S. hardware involved in this visit.
 - l. FMS Case: If this visit supports an FMS case, the approved FMS number should be added here.
 - m. Program/Agreement: If the visit supports a specific bilateral program its name will be listed here.
 - n. Knowledgeable U.S. Person: The embassy should list the U.S. government program manager or sponsor here.

All requests should be forwarded via USAF SAF/IA. Routing to other U.S. Government agencies slows the process considerably.

Once the request is forwarded to USAF it will be staffed by SAF/IA (Secretary of the Air Force/International Affairs). The request will be routed down to USAF ESC/INF (a local USAF office at Hanscom Air Force Base).

ESC/INF will coordinate the visit request with the Security Office at MIT Lincoln Laboratory. Once we respond affirmatively, the foreign embassy will receive notice of approval of the visit.

A few pointers:

This process works best when the request is made promptly. Some foreign embassies place time limits on requests (i.e. 60 days).

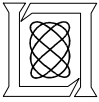
Always ensure that the CAGE code (3G050) is on the request. It identifies MIT Lincoln Laboratory in the system.

Foreign embassies may wish to forward a copy of their request to MIT/LL. Courtesy copies can be faxed to P.H. Mahoney (781) 981-0110. The copy should contain the Foreign Visit (FORDTIS) Case ID number. This aids MIT/LL track the visit as it routed through U.S. Government channels.

Lastly, please ensure that the request is routed through USAF.

Questions can be directed to Pat Mahoney at the address below.

Patrick H. Mahoney
Senior Group Administrator
Group 11, Security
(781) 981-2402
F (781) 981-0110
Secure (781) 981-6193
mahoney@LL.MIT.EDU



High Performance Embedded Computing Workshop 2002

PRELIMINARY AGENDA
24-26 September 2002

24 September

0730 **Check-In & Continental Breakfast**

AUDITORIUM

0830 **Welcome**
David Briggs / MIT Lincoln Laboratory

0835 **Keynote Address**
TBD
Maj Gen Paul Nielsen / AFRL

0905 **Opening Remarks**
Robert Bond / Jeremy Kepner / MIT Lincoln Laboratory

0915 **Session 1: Novel Hardware Architectures**
David Martinez / MIT Lincoln Laboratory

0925 **Invited Speaker**
Cognitive Information Processing Technology
Zach Lemnios / DARPA / IPTO

0955 **Invited Speaker**
MIND: Scalable Embedded Computing through Advanced Processor in Memory (PIM) Architecture
Thomas Sterling / CalTech / JPL

1025 **Break**

★ 1040 **MONARCH: A High Performance Embedded Processor Architecture with Two Native Computing Modes**
John Granacki / University of Southern California
Michael Vahey / Raytheon

★ 1110 **DARPA Data Intensive Systems (DIS) Embedded Computing Benchmarks for Critical Defense Signal Processing Applications**
Stephen Shank / Lockheed Martin
Steve Crago / USC-ISI
Liza Cross / Lockheed Martin
Rick Pancoast / Lockheed Martin
Joseph Racosky / Lockheed Martin
Jinwoo Suh / Information Sciences Institute
Leon Trevito / Lockheed Martin

1140 **Poster / Demo A: Hardware Architectures and Applications**
Henk Spaanenburg / Pentum Group, Inc.

Poster Session A Précis

Poster A.1 **A High Speed Signal Processing System**
Anders Ahlander / Ericsson Microwave Systems
Anders Astrom / Ericsson Microwave Systems

Poster A.2 **An Innovative High Performance Architecture for Vector and Matrix Math Algorithms**
Vera Anantha / Intrinsicity, Inc.
Christophe Harle / Intrinsicity, Inc.
Tim Olson / Intrinsicity, Inc.
George Yost / Intrinsicity, Inc.

Poster A.3 **Processing Challenges for a Dual Spectral Band Aerial Camera System**
Michael Bown / Recon-Optical Inc.
Alan Lubow / Recon-Optical Inc.

Poster A.4 **Real-Time Geo-Registration on High-Performance Computers**
Alan Chao / ALPHATECH Inc.
Monica Burke / ALPHATECH Inc.
Thomas Kurien / Mercury Computer Systems, Inc.
Luke Cico / Mercury Computer Systems, Inc.

Poster A.5 **Algorithmic Advances for Software Radios**
Matteo Frigo / Vanu Inc.

Poster A.6 **Space Flight Programmable Pixel Processor FPGA**
Omar Haddad / NASA-GSFC
Joel Offenberg / NASA-GSFC
D.J. Fixsen / NASA-GSFC

Poster A.7 **The Raw Microprocessor: Enabling Embedded Signal Processing on a General Purpose Computer Architecture**
Hank Hoffmann / MIT
Volker Strumpfen / MIT
Anant Agarwal / MIT

* Denotes presenter other than first author

★ Denotes outstanding submission

- Poster A.8** ***A Study of the Common Component Architecture (CCA) Forum Software***
 Daniel Katz / Jet Propulsion Laboratory / Caltech
 Robert Tisdale / Jet Propulsion Laboratory / Caltech
 Charles Norton / Jet Propulsion Laboratory / Caltech
- Poster A.9** ***Rapid Development with Macro Functions on Platform Field Programmable Arrays***
 Kendel McCarley / Raytheon
- Poster A.10** ***Signal Processing Architectures for Ultra-Wideband Wide-Angle Synthetic Aperture Radar Applications***
 Atindra Mitra / AFRL
 Joseph Germann / SKY Computers, Inc.
 John Nehrbass / Ohio State University
- Poster A.11** ***Implementing Image Processing Pipelines in a Hardware / Software Environment***
 Heather Quinn / Northeastern University
 Miriam Leeser / Northeastern University
 Laurie Smith-King / College of the Holy Cross
- Poster A.12** ***Adaptive Framework for Automated Mapping and Architecture Trades for Embedded Heterogeneous Systems***
 Raju Venkataramana / Tandel Systems, LLC

1235 **Lunch**

1345 **Session 2: Advanced Hardware Designs**
 Maya Gokhale / Los Alamos National Laboratory

- 1355 **Adaptive Beamforming using QR in FPGA**
 Richard Walke / QinetiQ LTD
- 1425 **Power Consumption of Customized Numerical Representations for Audio Signal Processing**
 Roger Chamberlain / Washington University
 Yen Hsiang Chew / Washington University
 Varuna DeAlwis / Washington University
 Eric Hemmeter / Washington University
 John Lockwood / Washington University
 Robert Morley / Washington University
 Ed Richter / Washington University
 Jason White / Washington University
 Huakai Zhang / Washington University
- 1455 **A Library of Parameterized Hardware Modules for Floating-Point Arithmetic and Their Use**
 Miriam Leeser / Northeastern University
 Pavle Belanovic / Northeastern University
- 1525 **Break**
- 1550 **Generation of Custom DSP Transform IP Cores: Case Study Walsh-Hadamard Transform**
 Fang Fang / Carnegie Mellon University
 James Hoe / Carnegie Mellon University
 * Markus Pueschel / Carnegie Mellon University
 Smarahara Misra / Carnegie Mellon University
- 1620 **A Comparison of Two Computational Technologies for Digital Pulse Compression**
 Michael Bonato / Catalina Research Inc.
- 1650 **Adjourn**
- 1700 **Reception**
- 1800 **Banquet Speaker**
 TBD
- 1845 **Banquet**

* Denotes presenter other than first author

★ Denotes outstanding submission

25 September

0730 **Check-in & Continental Breakfast**

AUDITORIUM

- 0830 **Announcements**
Robert Bond / Jeremy Kepner / MIT Lincoln Laboratory
- 0835 **Invited Speaker**
Use of "Streaming" Computation to Build Efficient High-Performance Embedded Systems
William Dally / Stanford University
- 0905 **Session 3: Compiler and Library Technologies**
Joseph Germann / SKY Computers, Inc.
- 0915 **Short Vector SIMD Code Generation for DSP Algorithms**
Franz Franchetti / Technical University of Vienna
* Markus Pueschel / Carnegie Mellon University
Jose Moura / Carnegie Mellon University
Christoph Ueberhuber / Technical University of Vienna
- 0945 **sc2 C-to-FPGA Compiler**
Maya Gokhale / Los Alamos National Laboratory
Jan Stone / Stone Ergonaut
Jan Frigo / Los Alamos National Laboratory
Christine Ahrens / Los Alamos National Laboratory
- 1015 **Break**
- 1030 **Monolithic Compiler Experiments using C++ Expression Templates**
Lenore Mullin / MIT Lincoln Laboratory
Edward Rutledge / MIT Lincoln Laboratory
Robert Bond / MIT Lincoln Laboratory
- 1100 **Streaming and Dynamic Compilers for High Performance Embedded Computing**
Peter Mattson / Reservoir Labs, Inc.
Jonathan Springer / Reservoir Labs, Inc.
Charles Garrett / Reservoir Labs, Inc.
Richard Lethin / Reservoir Labs, Inc.
- 1130 **Poster / Demo B: Software Technologies and Systems**
Robert Bernecky / NUWC

Poster Session B Précis

- Poster B.1** ***An Integrated Design Environment to Evaluate Power/Performance Tradeoffs for Sensor Network Applications***
Amol Bakshi / University of Southern California
Jingzhao Ou / University of Southern California
* Viktor Prasanna / University of Southern California
- Poster B.2** ***Distributed Data Management Architecture for Embedded Computing***
Hans-Werner Braun / University of California
Todd Hansen / University of California
Bertram Ludaescher / University of California
John Orcutt / Scripps Institute of Oceanography / UCSD
Arcot Rajasekar / University of California
Frank Vernon / Scripps Institute of Oceanography / UCSD
- Poster B.3** ***Application of Operating System Concepts to Coordination in Pervasive Sensing and Computing Systems***
Jesse Davis / University of Kansas
Joseph Evans / University of Kansas
Benjamin Ewy / Ambient Computing, Inc.
Larry Sanders / Ambient Computing, Inc.
- Poster B.4** ***Taskrunner: A Method for Developing Real-Time System Software***
Louis Hebert / MIT Lincoln Laboratory
- Poster B.5** ***Software Centric Optimization of a Real-Time Embedded System***
Max Lee / Raytheon
Marshall Moluf / Raytheon
- Poster B.6** ***Abstract Machines for Polymorphous Computing Architectures for Signal / Image Processing***
Lenore Mullin / MIT Lincoln Laboratory
Janice McMahon / MIT Lincoln Laboratory
Hank Hoffmann / MIT
- Poster B.7** ***High Application Availability***
Stephen Paavola / SKY Computers, Inc.

* Denotes presenter other than first author

★ Denotes outstanding submission

- Poster B.8** ***Design Space Exploration and Optimization of Embedded Cache Systems via a Compiler***
 Krishna Palem / Georgia Institute of Technology
 Rodric Rabbah / Georgia Institute of Technology
- Poster B.9** ***Resource Management for Digital Signal Processing via Distributed Parallel Computing***
 Albert Reuther / MIT Lincoln Laboratory
 Joel Goodman / MIT Lincoln Laboratory
- Poster B.10** ***Importing Application Kernels from MATLAB® Designs into Graphical Software Architectures***
 Christopher Robbins / MCCI
- Poster B.11** ***Real-Time Linux***
 Linus Sherrill / SKY Computers, Inc.
 Stephen Paavola / SKY Computers, Inc.
- Poster B.12** ***Multidimensional Performance Modeling for Advanced, Embedded, Signal Processors***
 Michael Stebnisky / Lockheed Martin
- Poster B.13** ***Rapid Portable Signal Processing Software Development Architecture***
 Kevin Tirko / Pennsylvania State University

1225 **Lunch**

1335 **Session 4: Emerging High Performance Software**
 David Cousins / BBN Technologies

- ★ 1345 **AltiVec Extensions to the Portable Expression Template Engine (PETE)**
 Edward Rutledge / MIT Lincoln Laboratory
- 1415 **Techniques for Co-Design of Optically-Connected Embedded Multiprocessors**
 Neal Bambha / US Army Research Laboratory
 Shuvra Bhattacharyya / University of Maryland
- 1445 **300x Matlab**
 Jeremy Kepner / MIT Lincoln Laboratory
- 1515 **Break**
- 1540 **Rapid Prototyping of Matlab / Java Distributed Applications using the JavaPorts Components Framework**
 Elias Manolakos / Northeastern University
- 1610 **Meeting the Demands of Changing Operating Conditions at Runtime Through Adaptive Programming Techniques for Network Embedded Computing**
 Richard Schantz / BBN Technologies
 Joseph Loyall / BBN Technologies
- 1640 **Patterns and Performance of Real-Time and Data Parallel CORBA for High-Performance Embedded Computing Applications**
 Douglas Schmidt / DARPA / IXO
 * Aniruddha Gokhale / Vanderbilt University
 Christopher Gill / Washington University
- 1710 **Invited Speaker**
Designing the Future of Embedded Systems at DARPA IXO
 Douglas Schmidt / DARPA / IXO
- 1740 **Adjourn**

* Denotes presenter other than first author

★ Denotes outstanding submission

26 September

0730 **Check-In & Continental Breakfast**

AUDITORIUM

0830 **Announcements**
Robert Bond / Jeremy Kepner / MIT Lincoln Laboratory

0835 **Invited Speaker**
Trends in HPC and HPEC Convergence
Richard Games / MITRE

0905 **Session 5: Government Sponsored Standards**
Edward Baranoski / MIT Lincoln Laboratory

0920 **Development Status of the Vector, Signal, and Image Processing Library (VSIPL)**
Mark Richards / Georgia Institute of Technology

0935 **VSIPL++: Intuitive Programming Using C++ Templates**
Mark Mitchell / CodeSourcery, LLC
Jeffrey Oldham / CodeSourcery, LLC

0950 **Data Reorganization Interface (DRI)**
Kenneth Cain, Jr. / Mercury Computer Systems
Anthony Skjellum / MPI Software Technology

1005 **Software Communications Architecture Compliant Software Defined Radios**
S. Murat Bicer / Mercury Computer Systems
Jeffrey Smith / Mercury Computer Systems

1020 **Break**

1035 **Session 6: Industry Sponsored Standards**
Craig Lund / Mercury Computer Systems

1050 **Progress in Standardization of RDMA Technology**
Arkady Kanevsky / Network Appliance, Inc.

1105 **VXS - A Novel and Emerging Architecture for Embedded Computing**
Jeffrey Harris / Motorola Computer Group

1120 **Status and Activity in the OMG Relevant to HPEC**
James Kulp / Mercury Computer Systems

1135 **Poster / Demo C: Software / System Technologies**
Brian Sroka / MITRE

Poster Session C Précis

Poster C.1 **Parallel ATR Scalability Results on Embedded Multiprocessor Systems**
Monica Burke / ALPHATECH, Inc.
Joel Douglas / ALPHATECH, Inc.
Gil Ettinger / ALPHATECH, Inc.

Poster C.2 **A Comparison of Java RMI, CORBA, and Web Services Technologies for Distributed SIP Applications**
Mark Hanes / Ohio State University
Stan Ahalt / Ohio State University
Ashok Krishnamurthy / Ohio State University

Poster C.3 **Distributed Embedded Computing in the Detection of Explosives**
Seemeen Karimi / Analogic Corporation
Barry Jackson / SKY Computers, Inc.
Carl Crawford / Analogic Corporation

Poster C.4 **What is Keeping Hard Real-Time Scheduling from being a Mainstream Technology in the Embedded Multiprocessing Domain Space?**
Daniel Lorts / University of Texas at Dallas

Poster C.5 **Real-Time Scene Generation Using PowerPC G4 Multiprocessor Systems for MMW Seeker HWIL Simulations**
Richard Olson, Jr. / Simulation Technologies, Inc.
H. Dewayne Satterfield / Simulation Technologies, Inc.

Poster C.6 **Implications of Using DARPA Polymorphous Computing Architectures (PCA) for Embedded DoD Processing Applications**
Rick Pancoast / Lockheed Martin
Steve Crago / USC-ISI
Liza Cross / Lockheed Martin
Marc DeMaio / Lockheed Martin
Joseph Racosky / Lockheed Martin
Matthew French / USC-ISI

Poster C.7 **VSIPL, from API to Product**
Sharon Sacco / SKY Computers, Inc.

Poster C.8 **Case: A COTS PowerPC-based Multicomputer Mapping of Surveillance Radar DSP Functionality**
Stephen Shank / Lockheed Martin
William Paterson / Lockheed Martin
John Johansson / Lockheed Martin
Leon Trevito / Lockheed Martin

* Denotes presenter other than first author

★ Denotes outstanding submission

- Poster C.9** **National Weather Radar Testbed System Implemented using COTS and VSIPL**
Bob Walsh / SKY Computers, Inc.
- Poster C.10** **US Only Poster**
Parallelized Subaperture and Subpatch-Based Wavefront Processing of RC-12 SAR Data on Mercury Embedded Architecture Systems
Brett Keaffaber / Veridian Engineering
Jeremy Gwinnup / Veridian Engineering
Mehrdad Soumekh / State University of New York at Buffalo
Ronald Dilsavor / AFRL
- Poster C.11** **US Only Poster**
Applications of Angle-Based Band Selection for Efficient Hyperspectral Processing
Nirmal Keshava / MIT Lincoln Laboratory
- Poster C.12** **US Only Poster**
SIP-7 Experience: Converting HPC Codes to VSIPL
Richard Linderman / AFRL
Jules Bergmann / AFRL
- Poster C.13** **US Only Poster**
A Future Ground Combat Weapon System Software Architecture
Rakesh Patel / USATACOM
Peter Haniak / USATACOM
Paul Richardson / University of Michigan
- Poster C.14** **US Only Poster**
A Software Framework for HPEC System Development
Scott Spetka / ITT Industries
George Ramseyer / AFRL
Richard Linderman / AFRL
- Poster C.15** **US Only Poster**
Software Portability, Interoperability and Reuse: A Middleware Approach
Andrew Vandivort / Raytheon
Harold Smith III / Raytheon
Michael DaBose / Raytheon
Garrett Wright / Raytheon
Gerald Morris / Raytheon

- 1230 Lunch
- 1340 **Session 7: System Applications**
Miriam Leeser / Northeastern University
- 1350 **Missile Seeker Common Computer Signal processing Architecture for Rapid Technology Upgrade**
Daniel Rabinkin / MIT Lincoln Laboratory
Edward Rutledge / MIT Lincoln Laboratory
Paul Monticciolo / MIT Lincoln Laboratory
- 1420 **Hybrid QR Factorization Algorithm for High Performance Computing Architectures**
Peter Vouras / Naval Research Laboratory
Gerard Meyer / Johns Hopkins University
- 1450 **Partitioning Computer Tasks within an FPGA + RISC heterogeneous Multicomputer**
John Bloomfield / Mercury Computer Systems, Inc.
- 1520 **Break**
- 1545 **Session 8: Advanced Systems (US Only Session)**
Rick Pancoast / Lockheed Martin
- 1555 **HPEC-SI Demonstration: Common Imagery Processor – APG-73 Image Formation**
Brian Sroka / MITRE
- 1625 **High Bandwidth Reconfigurable Embedded Daughter Card Accelerator**
Larry Ellcessor / Northrop Grumman
* Geoffrey Weiss / Northrop Grumman
Michael Lucas / Northrop Grumman
- 1655 **Adjourn**

* Denotes presenter other than first author

★ Denotes outstanding submission