CALL FOR PAPERS - IEEE TRANSACTIONS ON MULTIMEDIA

Special Issue on "New Software/Hardware Paradigms for Error-tolerant Multimedia Systems"

SUMMARY

Prevailing digital technologies such as multimedia signal processing and visualization, computer graphics and computer vision algorithms, multimedia retrieval engines, real-time analysis and recognition systems for novel multimedia services, require rapid responses to time-varying or space-varying system inputs (from image/audio samples to multimedia features and to complicated queries) under limited resources (processing cycles, data transfers, energy-consumption budget).

From the applications' perspective, two important characteristics are:

(i) efficient resource utilization is of critical importance and

(ii) approximate results are acceptable if the provisioned processor cycles, memory, or energy budget do not allow for full-precision results (error tolerance).

From the systems' perspective, software-based solutions running on multicore or manycore processors are very popular for such applications due to their inherent flexibility in parameterization, their fast time-to-market and the easy updating and maintenance of the service infrastructure. Since the mid 1980s, such deployments have relied upon the rapid advances in CMOS integration in order to achieve the required processing throughputs. However, there is strong evidence today that:

- the expected power limitations and chip faults created from further increases in CMOS integration density,
- the uncertainty in resource allocation in multicore/manycore systems and
- the expansion of multimedia applications to embedded systems,

lead to platforms where media applications have to become inherently error tolerant in order to cope with highly-uncertain, time-varying, system resources.

SCOPE

This special issue proposal solicits novel contributions in the area of error-tolerant multimedia systems over potentially highly-unreliable systems. We encourage submissions encompassing the multimodality of modern media systems, such as

- analysis of financial, biological and many other signals in resource-constrained or unreliable systems,
- cross-disciplinary areas, such as human-computer interaction and social and multimedia networks, combined with new paradigms for unreliable computing systems (e.g. computing via P2P networks, multimedia data storage and reliability under distributed computing),
- error-tolerant multimedia data mining and stream mining (audio, speech, images, video, etc.).

Topics include, but are not limited to:

- Throughput or power vs. distortion for error-tolerant image/video coding systems
- Trade-offs in high-performance server-based computing for error-tolerant multimedia processing
- Recall precision vs. computation or energy-consumption in multimedia data indexing and recognition systems
- Resource allocation and resource forecasting in error-tolerant multimedia systems over: multicore, manycore (e.g. GPU-type), or embedded systems
- Breakthroughs in processing throughput or energy consumption against the state-of-the-art
- Cross-layer (VLSI/architecture/middleware/application) system resiliency for multimedia systems
- New paradigms for error recovery and error detection under error-tolerant hardware/software designs for multimedia systems
- Novel system vs. application trade-offs for emerging domains: real-time object recognition, computer vision and gesture-based or haptic-based gaming, real-time multimedia retrieval and data mining, etc.

IMPORTANT DATES

Submission deadline:	**Dec. 2nd, 2011**	First notification:	Mar. 19th, 2012
Revision due:	May 14th, 2012	Notification of acceptance:	June 29th, 2012
Final manuscript due:	July 23rd, 2012	Tentative publication date:	Dec. 2012

GUEST EDITORS

Dr. Yiannis Andreopoulos (Lead Guest Editor) Electronic Engineering Dept., University College London, UK iandreop@ee.ucl.ac.uk	Prof. Liang-Gee Chen Electrical Engineering Dept. National Taiwan University, R.O.C. lgchen@cc.ee.ntu.edu.tw	Prof. Brian L. Evans Electrical and Computer Engineering Dept. University of Texas at Austin, USA bevans@ece.utexas.edu	Dr. Hong Jiang Senior Principal Engineer – Chief Media Architect Intel Corporation, USA hong.h.jiang@intel.com	Prof. Rakesh Kumar Electrical and Computer Engineering Dept. University of Illinois at Urbana Champaign, USA rakeshk@illinois.edu

Please address all correspondences regarding this special issue to the Guest Editors.

Submission Procedure

Prospective authors should submit high quality, original manuscripts that have not appeared, nor are under consideration, in any other journals. Manuscripts must be submitted electronically through the online IEEE TMM Manuscript Central (MC) submission system at (http://mc.manuscriptcentral.com/tmm-ieee) by selecting the title of this Special Issue from the drop-down menu at the first step of the manuscript submission process.
All papers will be reviewed by at least three independent reviewers.
Papers should be formatted according to the IEEE Transactions on Multimedia guidelines for authors, please visit:
http://www.signalprocessingsociety.org/tmm/tmm-author-info/

Reproducible Research – Impact to Multimedia Systems Research

Since research in multimedia systems has traditionally benefited greatly from prototypes and open sourcing for research purposes, amongst equally-rated submissions from the first round of review, the Guest Editors will favor submissions providing for reproducible research[1] by submission of example source codes, executables and/or other resources allowing for detailed examination and broad dissemination of the research results. As such, we particularly encourage the submission of supplementary materials in support of a manuscript, as well their availability to the IEEE TMM subscribers once the manuscript has been accepted.

To this end, the existing infrastructure of IEEE TMM MC System ***must*** be used to upload example source codes, executables, measurements, videos, audio, presentations, additional documents with proofs, etc. that help in reproducing the key figure(s) of a submission. These materials must be included within a single ZIP file named as:

```
supplementary_materials.use_unzip_to_decompress
```

and must be uploaded with the file designation: "Multimedia" in the TMM MC System at the screen where the manuscript PDF file is submitted (i.e. "Step 5: File Upload" in the TMM MC System). A README.txt (plain text) file must exist inside the supplementary materials file and must also be submitted in the TMM MC System with the file designation: "Supporting Document". This file must explain the system requirements (operating system and processor requirements – if applicable) and should list any proprietary software needed to view/process the supplementary materials. Any installation or series of instructions needed to reproduce figures from the submitted manuscript must be explained in concise form. Do not include any software from third parties that can easily be obtained online or is expected to be present in a research laboratory (such as Matlab, Mathematica, C/C++ compiler files, multimedia players, hardware design tools, etc.). The TMM MC System allows for up to 90 Mbytes within a single supplementary materials file.

This mechanism will enable the reviewers to access these materials while ensuring their complete anonymity and confidentiality. Authors wishing to submit supplementary materials can include the following statement related to intellectual property rights:

```
The authors and their employers may have intellectual property rights relating to the
technology described in this manuscript. All these rights are reserved. This submission
and these supplementary materials do not imply a license to use any part of this work for
personal or commercial purposes.
```

However, the final responsibility for obtaining related clearances from research sponsors/employers is left to the authors.

The submission of such materials is on a voluntary basis and it is not a requirement for the acceptance of a manuscript.

[1] See http://reproducibleresearch.net/ for further details on reproducible research.