



Data Storage Technical Committee



# IEEE Data Storage Technical Committee Update

Haitao (Tony) Xia

Chair, IEEE Data Storage Technical Committee

# IEEE DSTC



## ▪ **Goals and activities:**

- Technical group under IEEE Communications Society to promote data storage related technologies and their applications
- Scope covers signal processing and coding for magnetic and non-volatile storage systems, cloud storage/computing, mobile storage and big data
- Bridge between storage industry and universities to engage research collaboration
- Sponsor and co-sponsor conferences, workshop, etc.

## ▪ **Join us:**

- Website: <http://committees.comsoc.org/spfs/>
- Contact us through Prof. Brian M. Kurkoski ([kurkoski@jaist.ac.jp](mailto:kurkoski@jaist.ac.jp))

# IEEE DSTC



## ▪ **Technical Committee Officers:**

- Chair: Dr. Haitao (Tony) Xia, LSI Corporation, USA
- Vice Chair of Industry: Dr. Xinde Hu, SanDisk, USA
- Vice Chair of Academic: Prof. Sedat Olcer, Istanbul Bilgi University
- Secretary: Prof. Brian M. Kurkoski, Japan Advanced Institute of Science of Technology (JAIST), Japan
- Treasurer: Dr. Kui Cai, Data Storage Institute, Singapore

# IEEE DSTC



## ▪ Conference support from DSTC:

- ICC 2013, Budapest Hungary
  - Chair: Prof. Tiffany Li, Lehigh University
  - 25 papers submitted
- Globecom 2013, Atlanta, Georgia, USA
  - Chair: Edward Au, Huawei Technologies
  - 6 papers accepted: 5 allocated in a dedicated session for Data Storage and 1 allocated in a poster session
- ICC 2014, Sydney, Australia
  - Chair: Prof. Brian Kurkoski, JAIST
- Globecom 2014, Austin, Texas, USA
  - Chair: Prof. Lara Dolecek, UCLA
- ICNC 2014, Honolulu, Hawaii, USA
  - Co-Chairs: Haitao (Tony) Xia, LSI Corporation, Prof. Yiran Chen, University of Pittsburg
- ICC 2015, London, UK
  - Chair: Xinde Hu, SanDisk, USA
- Globecom 2015, San Diego, USA
  - Chair: Haitao (Tony) Xia, LSI Corporation

# ICC2014 - Sydney

- *Brian Kurkoski, Track Chair*
- *15 papers were submitted and reviewed*
  - *8 papers on “Coded Distributed Storage”*
    - *2 had a security component*
  - *7 papers on “traditional” coding*
    - *5 flash/PCM oriented*
    - *2 on 2D magnetic recording*
- TPC meeting Thursday 12 December
- Acceptance Notification sent by EDAS: 12 January 2014
- **Thank you to the TPC Members (~3 papers/member). Reviews 93% complete.**

- Kui Cai, Data Storage Institute, Singapore
- Lara Dolecek, UCLA, USA
- Shayan Garani, Indian Institute of Science, Bangalore
- Jeongseok Ha, KAIST, Korea
- Kohsuke Harada, Toshiba, Japan
- Xinde Hu, SanDisk Corporation, USA
- Hiroshi Kamabe, Gifu University, Japan
- Peter Mueller, IBM Zurich

Frederique Oggier, Nanyang Technological University,  
Lluís Pamies-Juarez, HGST  
Ricardo Raheli, University of Parma, Italy  
Pornchai Supnithi, King Mongkut's Institute of  
Technology Ladkrabang, Thailand  
Haitao Xia, LSI Corporation, USA  
Eitan Yaakobi, Caltech, USA  
Xinmiao Zhang, SanDisk Corporation, USA

- **Advice: Increase number of coded distributed storage experts**

# Globecom2014 - Austin

- *Lara Dolecek, Track Chair*
- *Submission deadline: April 1<sup>st</sup>, 2014*
- **TPC member:**
  - Lara Dolecek, UCLA, USA
  - Benjamin Belzer, Washington State Univ.
  - J. Cruz, Univ. of Oklahoma
  - Faith Erden, Seagate Technology
  - Shayan Garani Srinivasa, Indian Institute of Science
  - Idan Goldenberg, SanDisk
  - Kiran Gunnam, Vilion Memory
  - Anxiao (Andrew) Jiang, Texas A&M Univ.
  - Mustafa Kaynak, Micron Technology
  - Brian Kurkoski, JAIST
  - Luis Lastras-Montano, IBM
  - Tiffany Jing Li, Lehigh Univ.
  - Jaekyun Moon, KAIST
  - Ravi Motwani, Intel

Moshe Schwartz, Ben-Gurion Univ.  
Ying Tai, SanDisk  
Bane Vasic, Univ. of Arizona  
Haitao (Tony) Xia, LSI  
Eitan Yaakobi, Technion

# JSAC Special Issue on Data Storage

- *IEEE Journal on Selected Areas on Communications*  
**Special Issue on Communication Methodologies for the Next-Generation Storage Systems**
- GUEST EDITORS: Lara Dolecek (lead), Mario Blaum, Jehoshua Bruck, Anxiao (Andrew) Jiang, Kannan Ramchandaran, Bane Vasic
- Initial paper submission: May 1, 2013 (extended to May 15)  
First/second reviews: Sept. 1/Nov. 1, 2013  
Final manuscripts due: Dec. 15, 2013  
Publication: Second Quarter 2014
- “terrific turn out” About 50 submitted papers
- Anticipate around 35% acceptance rate.
- Scope of submitted papers: coding for non-volatile memories, detection and estimation, new storage channels, distributed network storage, general combinatorial problems related to the new storage/memory channels, others.
- Report by Lara Dolecek

# Best Paper Award

- Best Paper Award and Best Student Paper Award given each year
- 2011 and 2012 nomination deadline was March 31, 2013
- Nominations received:
  - 2 nominations for 2011 Best Student Paper Award
    - “Joint Decoding of LDPC Codes and Finite-State Channels via Linear-Programming”, J-SAC 2011
    - “Optimal Exact-Regenerating Codes for Distributed Storage at the MSR and MBR Points via a Product-Matrix Construction”, IEEE Trans Information Theory, 2011
  - 2 nominations for 2012 Best Student Paper Award
    - “Minimum Distance Analysis of a Certain Class of 2-D ISI Channels” IEEE Trans Information Theory, 2012
    - “Locally Repairable Codes”, ISIT 2012
  - 1 nomination for 2011 Best Paper Award.
- Proposal:
  - merge the 2011 and 2012 Best Student Paper Awards.
  - no Best Paper Award
  - decision to be announced at the end of November 2013



# Best Paper Award

- **Best Paper/Student Paper Award**

- K. V. Rashmi, Nihar B. Shah and P. Vijay Kumar, “Optimal Exact-Regenerating Codes for Distributed Storage at the MSR and MBR Points via a Product-Matrix Construction”, IEEE Transactions on Information Theory, Vol. 57, No. 8, August 2011

- Report by Kui Cai

# IEEE DSTC



## ▪ Membership Promotion support from DSTC:

- 2013 Distinguish Lecturer Nomination
  - Prof. Bane Vasic, University of Arizona
- 2013 IEEE Fellow Nomination (co-nomination)
  - Prof. Krishna Narayanan, Texas A&M University
- 2013 IEEE Senior Member Nomination
  - Prof. Lara Dolecek, UCLA

# IEEE DSTC



## ▪ DSTC co-sponsored activities

- “Cloud, Storage and Big Data Shanghai Summit” <http://www.caiss.org/bigdata/>
  - July 22-23, 2013, Shanghai, China
  - Co-sponsored with Chinese American Information Storage Society (CAISS)
  - More than 250 persons attended
    - 10% China Development Zone technical officers, 30% hardware engineers, 40% software engineers and 20% university researchers



# Mailing List: Migration to IEEE Listserv

- DSTC Mailing list is maintained by the secretary
  - low-volume announcements: ICC/Globecom CFPs, DSTC meetings, etc.
  - mailing list is de-facto member list (about 180 members)
- Current DATASTORAGE list from secretary's university mail server
- **Want to migrate to IEEE listserv**
  - More stable when officers change
  - Consistent for members
  - Official IEEE address
  - Listserv is fairly powerful:
    - subscribe by web or “subscribe dstc [yyy@xxx.com](mailto:yyy@xxx.com)”
- **Current status**
  - Obtained the listserv account [dstc@ieee.org](mailto:dstc@ieee.org)
  - Testing
- **To do**
  - Move current member list from old server to listserv
  - Add moderators: Executive committee, ICC/GC Track chairs