

## ALEKSANDAR KAVCIC

University of Hawaii, Department of Electrical Engineering, Honolulu, HI 96822

### EDUCATION

- 1998 Ph.D. in Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA  
1993 Dipl.-Ing. in Electrical Engineering, Ruhr University Bochum, Bochum, Germany

### EMPLOYMENT

- 2011 – present *Professor* of Electrical Engineering, University of Hawaii, Manoa, HI  
2010 – present *Graduate Chair*, Electrical Engineering Department, University of Hawaii, Manoa, HI  
2007 – 2011 *Associate Professor* of Electrical Engineering, University of Hawaii, Manoa, HI  
2002 – 2006 *John L. Loeb Associate Professor of the Natural Sciences*, Harvard University, MA  
1998 – 2002 *Assistant Professor* of Electrical Engineering, Harvard University, Cambridge, MA  
1993 – 1998 *Research Assistant*, ECE Dept., Carnegie Mellon University, Pittsburgh, PA

### PROFESSIONAL

- 2014 *General Co-Chair*, IEEE International Symposium on Information Theory 2014 (ISIT)  
2010 *Guest Editor*, IEEE Journal on Selected Areas in Communications  
2007 *Co-chair*, General Symposium, Global Communications Conference, Washington DC  
2005 – 2007 *Chair*, Data Storage Technical Committee, IEEE Communications Society  
2001 – 2004 *Associate Editor for Detection and Estimation*, IEEE Transactions on Information Theory  
2000 – 2004 *Vice Chair*, Signal Processing for Storage Technical Committee, IEEE Comm. Society  
2002 *Technical Program Committee Member and Session Organizer*, Communications Theory Symposium, IEEE Global Communications Conference, Taipei, Taiwan  
2002 *Technical Program Committee Member and Session Organizer*, Communications Theory Symposium, IEEE International Conference on Communications, New York, NY  
2001 *Session Organizer*, Session on Signal Processing and Coding for Storage, IEEE Global Communications Conference, San Antonio, TX  
1999 – 2001 *Chair, Vice Chair*, Boston Chapter, IEEE Communications Society  
1999 – 2000 *Vice Chair*, Boston Chapter, IEEE Communications Society  
1993 – present *Senior Member*, The Institute of Electrical and Electronics Engineers (IEEE)  
Societies: Communications, Information Theory, Signal Processing, Magnetics

### HONORS and AWARDS

- 2005 *Best Paper Award in Signal Processing and Coding for Data Storage*, IEEE Comm. Society  
2005 Co-author and advisor, *Best Student Paper Award in Signal Processing and Coding for Data Storage*, IEEE Comm. Society  
2002 *John L. Loeb Associate Professorship*, Harvard University  
2000 *CAREER Award*, awarded by the National Science Foundation for faculty career development  
1999 *IBM Partnership Award*, awarded by IBM for faculty career development  
1997 *Quantum Fellowship*, awarded by Quantum Corporation for excellence in Signal Processing for Magnetic Recording  
1996 *Chair*, Student Advisory Committee, Data Storage Systems Center, Carnegie Mellon University  
1996 *IEEE Communications Society Travel Award*, GLOBECOM, London, UK, November 1996

### RESEARCH INTERESTS

Communications, Signal Processing, Information Theory, Magnetic Recording

### PATENTS

- P1 *Method and Apparatus for Correlation-Sensitive Adaptive Sequence Detection*, US Patent 6,201,839, Filing date: April 3, 1998; Issue date: March 13, 2001.  
P2 *Soft and hard sequence detection in ISI memory channels*, US Patent 6,438,180, Filing date: March 1 1999; Issue date: August 20, 2002.  
P3 *Soft Detection of Data Symbols in the Presence of Intersymbol Interference and Timing Error*, US Patent 7,154,965, Filing date: October 8, 2002, Issue date: December 26, 2006

- P4 *Methods and Apparatus for Improving Performance of Information Coding Scheme*, Filing date: February 9, 2004
- P5 *Handling Synchronization Errors Potentially Experienced by a Storage Device*, Filing Date: November 6, 2006.

## 5 RELEVANT PUBLICATIONS

1. "A Belief Propagation Based Power Distribution System State Estimator," Y. Hu, A. Kuh, A. Kavčić, T. Yang, *IEEE Computational Intelligence Magazine*, vol. 6, pp. 36-46, August 2011.
2. "Real-time State Estimation on Micro-grids," Y. Hu, A. Kuh, A. Kavčić, D. Nakafuji, *Proceedings of the International Joint Conference on Neural Networks*, San Jose, CA, August 2011.
3. "Micro-grid State Estimation Using Belief Propagation on Factor Graphs," Y. Hu, A. Kuh, A. Kavčić, D. Nakafuji, *Proceedings of the Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC)*, Singapore, December 2010.
4. "Error Exponents for Finite-Hypothesis Channel Identification," P. Mitran, A. Kavčić, *IEEE Transactions on Information Theory*, vol. 52, pp. 245-255, January 2006.
5. "Matrices with Banded Inverses: Inversion Algorithms and Factorization of Gauss-Markov Processes," A. Kavčić and J. M. F. Moura, *IEEE Transactions on Information Theory*, vol. 46, pp. 1495-1509, July 2000.

## ADDITIONAL 5 SELECTED PUBLICATIONS

6. "A Generalization of the Blahut-Arimoto Algorithm to Finite-State Channels," P. O. Vontobel, A. Kavčić, D. Arnold, H.-A. Loeliger, *IEEE Transactions on Information Theory*, vol. 54, May 2008.
7. "Simulation-Based Computation of Information Rates for Channels with Memory," D. Arnold, H.-A. Loeliger, P. Vontobel, A. Kavčić, W. Zeng, *IEEE Trans. Info. Theory*, v.52, pp.3498-3508, Aug.2006.
8. "Equal-Diagonal QR Decomposition and its Application to Precoder Design for Successive-Cancellation Detection," J.-K. Zhang, A. Kavčić, X. Ma, K. M. Wong, *IEEE Transactions on Information Theory*, vol. 51, pp. 154-172, January 2005.
9. "Iterative Timing Recovery," J. R. Barry, A. Kavčić, S. W. McLaughlin, A. Nayak, W. Zeng, in *IEEE Signal Processing Magazine*, vol. 21, pp. 89-102, January 2004.
10. "Adaptive Rank Estimation for Spherical Subspace Trackers," A. Kavčić and B. Yang, *IEEE Transactions on Signal Processing*, vol. 44, pp. 1573-1579, June 1996.

## Past PhD STUDENTS and POST-DOCTORAL FELLOWS

|                   |                                   |
|-------------------|-----------------------------------|
| Jason Bellorado   | Ph.D. 2006                        |
| Fabian Lim        | Ph.D. 2010                        |
| Ninoslav Marina   | post-doctoral fellow, 2007 – 2008 |
| Patrick Mitran    | Ph.D. 2006                        |
| Xiao Ma           | post-doctoral fellow, 2000 – 2002 |
| Ruwan Ratnayake   | Ph.D. 2008                        |
| Murari Srinivasan | post-doctoral fellow, 1999 – 2000 |
| Nedeljko Varnica  | Ph.D. 2005                        |
| Shaohua Yang      | Ph.D. 2004                        |
| Zhiyu Yang        | M.S. 2001                         |
| Xiaojun Yuan      | post-doctoral fellow, 2009 – 2010 |
| Wei Zeng          | Ph.D. 2006                        |
| Jian-Kang Zhang   | post-doctoral fellow, 2001 – 2002 |

## FORMER UNDERGRADUATE and GRADUATE ADVISORS

|                  |  |
|------------------|--|
| Johann Böhme     | Ruhr University Bochum, Bochum, Germany              |
| José M. F. Moura | Carnegie Mellon University, Pittsburgh, Pennsylvania |

## PROJECT/PAPER COLLABORATORS

Dieter Arnold, John Barry, Tolga Duman, Fatih Erden, Marc Fossorier, Marija Ilic, Ralf Kötter, Hans-Andrea Loeliger, Erozan Kurtas, Brian Marcus, Michael Mitzenmacher, Ravi Motwani, Ara Patapoutian, Jongsueng Park, Li Ping, Bill Ryan, Vahid Tarokh, Sekhar Tatikonda, Bane Vasic, Pascal Vontobel, Bruce Wilson, Roger Wood, K. M. Wong, Bin Yang.