**Kaibin Huang**

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*(updated on April 22, 2007)*

## Research Interests

Adaptive feedback for multiple antenna systems

Spatial Division Multiple Access (SDMA)

Code Division Multiple Access (CDMA)

Adaptive modulation, coding and power control

## Education

PhD - Wireless Comm. and Networks, The University of Texas at Austin, Aug. 2008 (Expected)
Advisers: Prof. Jeffrey G. Andrews and Prof. Robert W. Heath, Jr.
GPA = 3.92/4.0

M.Eng., ECE, National University of Singapore, Mar. 2000
Selected for *Accelerated Master Program* (top 5%)
Thesis: "Optical CDMA in a broadband optical network"

B.Eng., ECE, National University of Singapore, Jul. 1998
*1st Class Honors* (top 5%)
Thesis: "Design of spreading codes and architecture for optical CDMA"

## Work Experiences

Summer Intern — 05-08 2006
Freescale Semiconductor — Austin, TX
Project: "Efficient Feedback for MIMO Precoding in 3GPP LTE Systems"

Summer Intern — 05-08 2005
Freescale Semiconductor — Austin, TX
Project: "Codebook-Based MIMO Precoding for IEEE 802.16e Systems"

Associate Scientist — 2001-2004
Institute for Infocomm Research — Singapore
Project A: "TDD/FDD WCDMA Receivers with Chip Equalization"
Project B: "Software controlled reconfigurable mobile receiver"

Senior R&D Engineer — 2000-2001
Institute for Infocomm Research — Singapore
Project: "Software Controlled Configurable Radio"

R&D Engineer 2000-2001
Institute for Infocomm Research Singapore
Project: "Software Driven Flexible Transceiver"

Co-supervisor of Undergraduate Thesis 1998-1999
ECE, National University of Singapore Singapore
Thesis A: "Advanced Rake Receiver for 3GPP Systems"
Thesis B: "Designs of Sigma-Delta Analog-to-Digital Converters"

Consultant 1998-2000
ECE, National University of Singapore Singapore
Project A: Design of a virtual reality model for the school of engineering (displayed at the Singapore National Technology Exhibition)
Project B: Design of a multimedia information kiosk
Project C: Design of a spread-spectrum transceiver prototype

## Awards

Recipient of the University Continuing Fellowship (07-08) awarded by The University of Texas at Austin

- *This fellowship of about $25,000 is one of the highest honors awarded to a graduate student at The University of Texas.*

Recipient of the Best Student Paper Award at IEEE Globecom 2006 (category: Communication Systems), 11/2006

- *IEEE Globecom is the flagship conference of the IEEE communication society. This year, there were over 1000 papers presented and over 1500 attendees.*

Recipient of a Motorola Partnerships in Research Grant, Fall 2006 - Spring 2007

Designer of a virtual reality model selected for the Singapore National Technology Exhibition, 03/2000

Recipient of a Singapore Ministry of Education Postgraduate Scholarships for Foreign Students, 07/1998-07/1999

Recipient of a Singapore Ministry of Education Undergraduate Scholarships for Foreign Students, 01/1994-07/1998

Dean's List in recognition of outstanding scholastic achievement, 1996/1997

Dean's List in recognition of outstanding scholastic achievement, 1995/1996

## Service

Initiator and organizer of a Wireless Networking and Communications Group student seminar series, Fall 2006 - date

Reviewer for IEEE Trans. on Veh. Tech., IEEE Trans. on Comm., IEEE Trans. on Wireless Comm., IEEE Globecom (04-06), IEEE ICC (04-07), IEEE ISIT (07)

Committee Member, IEEE Student Branch, National University of Singapore, 1994-1995

## Kaibin Huang

### GRE and TOEFL

| GRE | Verbal | Analytical | Quantitative | Total |
|---|---|---|---|---|
| Score | 780/800 | 800/800 | 800/800 | 2380/2400 |

| TOEFL | Listening | Reading | Essay | Total |
|---|---|---|---|---|
| Score | 27/30 | 30/30 | 30/30 | 290/300 |

### US Visa and Citizenship

F-1 Student, Singapore

### Publications

Journal:

1. K. Huang, R. W. Heath, and J. G. Andrews, "Multi-user Aware Limited Feedback for MIMO Systems", submitted, *IEEE Trans. on Signal Processing*, Jan. 2007.
2. K. Huang, R. W. Heath, and J. G. Andrews, "Joint Beamforming and Scheduling for SDMA Systems with Limited Feedback", under revision, *IEEE Trans. Comm.*, Jul. 2006.
3. K. Huang, B. Mondal, R. W. Heath, and J. G. Andrews, "Limited Feedback for Temporally-Correlated Channels: Feedback Rate and Delay", *submitted to IEEE Tans. Info. Theory*, Mar. 2006
4. K. Huang, R. W. Heath, and J. G. Andrews, "Space Division Multiple Access with a Sum Feedback Rate Constraint", *to appear on IEEE Trans. on Signal Processing.*
5. K. Huang, "Supplementary Proof for 'Exact and Approximate Construction of Digital Phase Modulations by Superposition of AMP' by P. A. Laurent", *IEEE Trans. on Comm.*, vol 53, pp234-237, Feb 2005.
6. K. Huang, F. Adachi, Y.-H. Chew, "A more Accurate Analysis of Interference for Rake Combining on DS-CDMA Forward Link in Mobile Radio", *IEICE Trans. on Comm.*, vol E88-B, pp654-663, Feb 2005.

Conference:

1. K. Huang, R. W. Heath, J. G. Andrews, "Multiuser Limited Feedback for Wireless Multi-Antenna Communication", *accepted to IEEE Interl. Symp. on Info. Theory*, Jun. 2007.
2. K. Huang, R. W. Heath, and J. G. Andrews, "Space Division Multiple Access with a Sum Feedback Rate Constraint", *Proceedings of IEEE ICASSP 2007*, Apr. 2007.
3. K. Huang, J. G. Andrews, and R. W. Heath, "Joint Beamforming and Scheduling for SDMA Systems with Limited Feedback", *Proceedings of IEEE ICASSP 2007*, Apr. 2007.
4. K. Huang, B. Mondal, R. W. Heath, and J. G. Andrews, "Effect of Feedback Delay on Limited Feedback for Temporally Correlated Channels", *Proceedings of IEEE Globecom 2006*, Nov. 27- Dec.1, 2006.

5. K. Huang, B. Mondal, R. W. Heath, and J. G. Andrews, "Multi-Antenna Limited Feedback for Temporally Correlated Channels: Feedback Compression", *Proceedings of IEEE Globecom 2006*, Nov. 27- Dec.1 2006. (*Best Student Paper Award in the category of Communication Systems*)
6. K. Huang, B. Mondal, R. W. Heath, and J. G. Andrews, "Markov Models for MIMO Limited Feedback Channels", *Proceedings of IEEE ICASSP*, May 2006.
7. K. Huang, and J. G. Andrews, "Unified Linear Precoding for Minimum BER", *Proceedings of IEEE Globecomm 2005*, Nov. 2005.
8. K. Huang, Y.-H. Chew, P.-S. Chin, and K.-T. Heng, "A Novel DS-CDMA Rake Receiver: Architecture and Performance", *Proceedings of IEEE ICC 2004*, July 2004.
9. K. Huang, P.-S. Chin, and K.-T. Heng, "DS-CDMA Receiver with Sigma-Delta Modulation Encoding", *Proceedings of IEEE VTC 2003 Spring*, April 2003.
10. K. Huang, Q.-S. Quek, S. N. A. Ahmed, B. Jin, M. A. Kumar, "Techniques for reducing dynamic-range requirements for a software radio receiver", *Proceedings of Software Defined Radio Technical Conference 2002*, Nov. 2002.
11. Y.-H. Chew, K. Huang, T. T. Tjhung, "Effect of optical switches on BER performance of an optical CDMA system", *Proceedings of APCC/ICCS 1998*, Nov. 1998.

Patent Application:

1. J. Kotecha and K. Huang, "MIMO Precoding Enabling Spatial Multiplexing, Power Allocation and Adaptive Modulation and Coding", US Patent Application, Freescale Semiconductor, Sep. 2006.
2. K. Huang and J. Kotecha, "Feedback Reduction for MIMO Precoded System by Exploiting Channel Correlation", US Patent Application, Freescale Semiconductor, Sep. 2006.
3. K. Huang and J. Kotecha, "Generalized Codebook Design Method for Limited Feedback Systems", US Patent Application, Freescale Semiconductor, Sep. 2006.
4. K. Huang and Q.-S. Quek, "Methods for Dynamic Range Reduction in Wideband Receiver", US Patent Application, Singapore Institute for Infocomm Research, Aug. 2002.
5. K. Huang, K.-T. Heng, and P.-S. Chin, "Sigma Delta Modulation CDMA Receiver", US Patent Application, Singapore Institute for Infocomm Research, May 2001.