

CURRICULUM VITAE

THARAKA A. LAMAHEWA
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ACADEMIC QUALIFICATIONS

PhD in Telecommunications Engineering(Thesis examination is completed, August 2007),
Australian National University, Canberra.

Bachelor of Engineering in Information Technology and Telecommunications (IT&T),
First Class Honours (Best overall undergraduate results), December 2000, University of Adelaide,
South Australia.

APPOINTMENTS

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| Aug 2007 - Present | RESEARCH FELLOW, Department of Information Engineering, Research School of Information Sciences and Engineering (RSISE), Australian National University. |
| Nov 2006 - Aug 2007 | ALGORITHM DESIGN ENGINEER, Nanoradio Pty Ltd, Melbourne, Australia. |
| May 2003 - Nov 2006 | PHD SCHOLAR, Department of Information Engineering, Research School of Information Sciences and Engineering (RSISE), Australian National University. |
| Apr 2001 - Apr 2003 | SOFTWARE ENGINEER, Singapore Software Centre, Motorola Electronics Pvt Ltd, Singapore. |

RESEARCH EXPERIENCE

RESEARCH FELLOW, Department of Information Engineering, Research School of Information Sciences and Engineering, The Australian National University, Canberra: Aug 2006 - Present

- ◇ RESEARCH FOCUS: Capacity analysis and coding for fading channels with or without feedback, wireless channel modelling, Capacity analysis for space-time communications systems, ion channel modeling.

ALGORITHM DESIGN ENGINEER, Nanoradio Pty Ltd, Melbourne: Nov 2006 - Aug 2007

- ◇ RESEARCH FOCUS: Multi-carrier wireless communication systems (including OFDM and IEEE 802.11a/b/g/n standards), space-time-frequency channel modelling (channel estimation + delay spread estimation), receiver designs for wireless channels with large delay spread, IEEE 802.11e/n MAC layer enhancements.

- ◇ ACHIEVEMENTS: patent disclosure on channel delay spread estimation (submitted to PCT)

PHD STUDENT, TELECOMMUNICATIONS ENGINEERING, The Australian National University, Canberra: May 2003 - Nov 2006

- ◇ RESEARCH FOCUS: Space-time signal processing for wireless communications including space-time coding, diversity techniques, space-time-frequency channel modelling and capacity analysis of multi-antenna wireless communication systems
- ◇ ACHIEVEMENTS:
 - PhD in Telecommunications Engineering
 - 18 research publications
 - a best paper award

INDUSTRY EXPERIENCE

SOFTWARE ENGINEER, MOTOROLA SINGAPORE: Apr 2001 - Apr 2003

- ◇ Duties:
 - involved in developing software and firmware for 3G cellular infrastructure systems, in particular for Motorola CDMA 1X Base Transceiver Station (BTS);
 - involved in full software development life cycle (requirements gathering, design, coding and unit test as well as integration and testing) including quality assurance, configuration management and risk management activities;
 - involved in Software Engineering Institute's Capability Maturity Model (SEI-CMM) level 5 assessment: represented the software engineering group;
 - design and implementation of TCP/IP network stack, real-time operating systems
 - design and implementation of firmware for MSC8101 DSP (Ethernet controller and HDLC controller)
- ◇ Environment: C, C++, UML, assembly, Metrowerks CodeWarrior, Rational Clear-Case, VC++, MFC, WinSock
- ◇ Major Achievements:
 - received two **Motorola BRAVO awards** in 2001 and 2002 for my out standing contribution to Motorola base-station software design
 - secured 2 new projects for Motorola Singapore by proposing and prototyping the Internal BTS Router project to the client at Motorola CDMA BTS Design Center, Arlington Heights, USA.

TEACHING EXPERIENCE

- ◇ 2004 Differential Equations and Applications - MATH 2305 - ANU (second year undergraduate, two tutorial groups)
- ◇ 2005 Differential Equations and Applications - MATH 2305 - ANU (second year undergraduate, two tutorial groups)

- ◇ 2006 Mathematics and Applications 2 - MATH 1014 - ANU (first year undergraduate, two tutorial groups)
- ◇ 2006 Differential Equations and Applications - MATH 2305 - ANU (second year undergraduate, two tutorial groups)
- ◇ 2006 Mobile and Wireless Communications - ENGN 4536 - ANU (fourth year undergraduate, one tutorial group)
- ◇ 2006 Mobile and Wireless Communications - ENGN 6536 - ANU (masters, one tutorial group)

ACADEMIC AWARDS AND DISTINCTIONS

- ◇ 2004 WITSP'04 BEST PAPER 3rd Workshop on the Internet, Telecommunications and Signal Processing, Adelaide, Australia, "Exact Pairwise Error Probability Analysis of Space-Time Codes in Realistic Propagation Environments". Selected as one of the best papers and invited to submit a version of the paper to a special issue of the Journal of Telecommunications and Information Technology.
- ◇ 2003 - 2006, AUSTRALIAN NATIONAL UNIVERSITY Postgraduate Research Scholarship.
- ◇ 2003 - 2006, AUSTRALIAN NATIONAL UNIVERSITY-RESEARCH SCHOOL OF INFORMATION SCIENCES AND ENGINEERING Supplementary PhD Scholarship.
- ◇ 2001 and 2002, MOTOROLA BRAVO AWARDS for outstanding contribution to Motorola CDMA base-station software design.
- ◇ 2000, DEAN'S CERTIFICATE OF MERIT for high academic achievements in the Final year Bachelor of Engineering at University of Adelaide.
- ◇ 2000, BEST OVERALL UNDERGRADUATE RESULTS in the department of Electrical and Electronic Engineering, University of Adelaide: Overall average: 86.86%
- ◇ 1999, DEAN'S CERTIFICATE OF MERIT for high academic achievements in the Third year Bachelor of Engineering at University of Adelaide.
- ◇ 1999, SIR WILLIAM GOODMAN SCHOLARSHIP for obtaining the best overall result in the Third year Bachelor of Engineering at University of Adelaide.
- ◇ 1999, SOFTWARE ENGINEERING PROJECT FIRST PRIZE, Computer Science Department, University of Adelaide.
- ◇ 1998, DEAN'S CERTIFICATE OF MERIT for high academic achievements in the Second year Bachelor of Engineering at University of Adelaide.
- ◇ 1998, PHILIPS ELECTRONICS AUSTRALIA LIMITED PRIZE IN ELEMENTS OF ELECTRONICS, Second year Bachelor of Engineering at University of Adelaide.
- ◇ 1998, E V CLARK PRIZE FOR ELECTRICAL AND ELECTRONIC ENGINEERING, Second year Bachelor of Engineering at University of Adelaide.
- ◇ 1997, DEAN'S CERTIFICATE OF MERIT for high academic achievements in the First year Bachelor of Engineering at University of Adelaide.

- ◇ 1996-2000, AUSTRALIAN DEVELOPMENT CO-OPERATION SCHOLARSHIP by Australian Agency for International Development (AIDAB) (now known as AusAid), to undertake Bachelor of Engineering studies at University of Adelaide.
- ◇ 1993, ALL ISLAND PURE MATHEMATICS PRIZE at General Certificate of Education (Advanced Level), Sri Lanka, where I also obtained High Distinctions for all subjects.

ACTIVITIES

JOURNAL PAPERS REFEREEING

- ◇ Reviewer for the IEEE SIGNAL PROCESSING LETTERS.
- ◇ Reviewer for the IEE ELECTRONICS LETTERS.
- ◇ Reviewer for the IEURASIP JOURNAL ON WIRELESS COMMUNICATIONS AND NETWORKING.
- ◇ Reviewer for the IEEE COMMUNICATIONS LETTERS.

CONFERENCE PAPERS REFEREEING

- ◇ Reviewer for the 4TH AUSTRALIAN COMMUNICATIONS THEORY WORKSHOP (AUSCTW) 2004.
- ◇ Reviewer for the IEEE INTERNATIONAL SYMPOSIUM ON SPREAD SPECTRUM TECHNIQUES AND APPLICATIONS (ISSSTA) 2004
- ◇ Reviewer for the 5TH AUSTRALIAN COMMUNICATIONS THEORY WORKSHOP (AUSCTW) 2005.
- ◇ Reviewer for the IEEE GLOBAL COMMUNICATION CONFERENCE (GLOBCOMM) 2005.
- ◇ Reviewer for the 6TH AUSTRALIAN COMMUNICATIONS THEORY WORKSHOP (AUSCTW) 2006.
- ◇ Reviewer for the IEEE VEHICULAR TECHNOLOGY CONFERENCE (VTC06) 2006.
- ◇ Reviewer for the IEEE INTERNATIONAL COMMUNICATIONS CONFERENCE (ICC) 2006.

PUBLICATIONS

- P1. T. A. Lamahewa, T. D. Abhayapala, and R. A. Kennedy, "Fading resistance of orthogonal space-time block codes under spatial correlation," in *Proc. IEEE Workshop on Signal Processing Advances in Wireless Communications, SPAWC'04*, Lisbon, Portugal, July 2004, pp. 278–282.
- P2. T. A. Lamahewa, T. D. Abhayapala, and R. A. Kennedy, "Effect of transmit antenna configuration on rank-determinant criteria of space-time trellis codes," in *Proc. IEEE International Symposium on Spread Spectrum Techniques and Applications, ISSSTA'04*, Sydney, Australia, Sept. 2004, pp. 750–754.
- P3. T. A. Lamahewa, M. K. Simon, T. D. Abhayapala, and R. A. Kennedy, "Exact pairwise error probability analysis of space-time codes in realistic propagation environments," in *Workshop on the Internet, Telecommunications, and Signal Processing, WITSP'04*, Adelaide, Australia, Dec. 2004, pp. 170–175.
- P4. T. A. Lamahewa, R. A. Kennedy, and T. D. Abhayapala, "Upper-bound for the pairwise error probability of space-time codes in physical channel scenarios," in *Proc. 6th Australian Communications Theory Workshop, AusCTW'05*, Brisbane, Australia, Feb. 2005, pp. 26–32.
- P5. T. A. Lamahewa, R. A. Kennedy, and T. D. Abhayapala, "Spatial precoder design using fixed parameters of MIMO channels," in *Proc. of IEEE 11th Asia-Pacific Conference on Communications, APCC'05*, Perth, Western Australia, Oct. 2005, pp. 82–86.
- P6. T. A. Lamahewa, T. S. Pollock, and T. D. Abhayapala, "Achieving maximum capacity from a fixed region of space," in *Workshop on the Internet, Telecommunications, and Signal Processing, WITSP'05*, Noosa Heads, Brisbane, Australia, Dec. 2005, pp. 38–43.
- P7. T. A. Lamahewa, M. K. Simon, R. A. Kennedy, and T. D. Abhayapala, "Performance analysis of space-time codes in realistic propagation environments: A moment generating function-based approach," *Journal Of Communication and Networks*, vol. 7, no. 4, pp. 450–461, Dec. 2005.
- P8. T. A. Lamahewa, R. A. Kennedy, T. D. Abhayapala, and T. Betlehem, "MIMO channel correlation in general scattering environments," in *Proc. 7th Australian Communication Theory Workshop, AusCTW'06*, Perth, Western Australia, Feb. 2006, pp. 93–98.
- P9. T. Betlehem, T. D. Abhayapala, and T. A. Lamahewa, "Space-time MIMO channel modelling using angular power distributions," in *Proc. Australian Communication Theory Workshop, AusCTW'06*, Perth, Western Australia, Feb. 2006, pp. 163–168.
- P10. T. A. Lamahewa, M. K. Simon, T. D. Abhayapala, and R. A. Kennedy, "Exact pairwise error probability analysis of space-time codes in spatially correlated fading channels," *Journal of Telecommunications and Information Technology (JTIT)*, vol. 1/2006, pp. 60–68, Apr. 2006.
- P11. T. A. Lamahewa, T. D. Abhayapala, R. A. Kennedy, and J. T. Y. Ho, "Space-time cross correlation and space-frequency cross spectrum in non-isotropic scattering environments," in *Proc. IEEE Int. Conf. Acoust., Speech Signal Processing*, Toulouse, France, May 2006, vol. IV, pp. IV–609–612.
- P12. T. A. Lamahewa, V. K. Nguyen, and T. D. Abhayapala, "Exact pairwise error probability of differential space-time codes in spatially correlated channels," in *Proc. of IEEE International Conference on Communications, ICC'06*, Istanbul, Turkey, June 2006, vol. 10, pp. 4853–4858.

- P13. T. A. Lamahewa, V. K. Nguyen, T. D. Abhayapala, and R. A. Kennedy, "Spatial precoder design for differential space-time coded systems: Based on fixed parameters of MIMO channels," in *Proc. IEEE Workshop on Signal Processing Advances in Wireless Communications, SPAWC*, France, July 2006.
- P14. T. Betlehem, T. A. Lamahewa, and T. D. Abhayapala, "Dependence of MIMO system performance on the joint properties of angular power," in *Proc. IEEE International Symposium on Information Theory, ISIT'06*, Seattle, USA, July 2006, pp. 2849–2853.
- P15. T. A. Lamahewa, *Space-Time Coding and Space-Time Channel Modelling for Wireless Communications*, Ph.D. thesis, Research School of Information Sciences and Engineering, Australian National University, Canberra ACT, Nov. 2006.
- P16. R. Iqbal, T. D. Abhayapala, and T. A. Lamahewa, "Information rates of time-varying rayleigh fading channels in non-isotropic scattering environments," in *Workshop on the Internet, Telecommunications, and Signal Processing, WITSP'06*, Hobart, Australia, Dec. 2006, (ISBN: 0 9756934 2 5).
- P17. M. Nilsbo T. A. Lamahewa and S. A. Leyonhjelm, "Patent disclosure: A method and an apparatus for estimating a delay spread of a multipath channel," Patent Cooperation Treaty (PCT) application (Sweden) (submitted), Apr. 2007.
- P18. T. A. Lamahewa, R. A. Kennedy, T. D. Abhayapala, and V. K. Nguyen, "Spatial precoder design for space-time coded MIMO systems: Based on fixed parameters of MIMO channels," *Wireless Personal Communications*, vol. X, no. x, pp. aa–bb, DOI:10.1007/s11277-007-9281-4 (to appear in 2007).
- P19. T. A. Lamahewa, T. D. Abhayapala, R. A. Kennedy, T. Betlehem, and J. T. Y. Ho, "Space-time channel modelling in general scattering environments," 2007, (to be submitted).
- P20. T. A. Lamahewa, T. S. Pollock, and T. D. Abhayapala, "Achieving maximum capacity from spatially constrained dense MIMO systems," *IEEE Journal on Selected Areas in Communications*, (to be submitted).