

Ms. Biao Lu

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Education

- Ph.D. in Electrical Engineering, December 2000
The University of Texas at Austin, Austin, Texas
Area: Telecommunications and Information Systems Engineering
Dissertation Topic: *WIRELINE CHANNEL ESTIMATION AND EQUALIZATION*
Dissertation Advisor: Brian L. Evans
GPA: 3.70/4.00
- Master of Science in Electrical Engineering, December 1997
The University of Texas at Austin, Austin, Texas
Area: Telecommunications and Information Systems Engineering
GPA: 3.70/4.00
- Bachelor of Biomedical Engineering, July 1992
Capital Institute of Medicine, Beijing, P. R. China
Senior Project: “Data Compression of ECG Using Multilayer Perceptron Network”
Project Advisor: Prof. Kai Ouyang
GPA: 3.85/4.00

Experience

- **Working Experience:** *May 1999 - August 1999*
Summer Intern at Austin Product Center, Schlumberger, USA
 - Designed and modified the time-domain equalizers for wireline systems
 - Worked on performance analysis of time-domain equalizers
- **Research Experience:** *January 1997 - present*
Embedded Signal Processing Laboratory, UT-Austin
 - Researching the channel shortening for discrete multitone systems
 - Researching the blind channel shortening for discrete multitone system
 - Performance analysis of feedforward neural network equalizers
 - Design of a new equalizer by cascading two feedforward neural networks
 - Worked on parameter estimation of exponentially damped sinusoids.
 - Heterogeneous modeling of neural networks in Ptolemy environment.
 - Using Cellular Neural Networks in image processing for edge detection and image halftoning.

- Combination of cellular neural networks and wavelets for removing both impulsive noise and Gaussian noise
- **Research Experience:** *May 1996 - December 1996*
Computer and Vision Research Center, UT-Austin
 - Worked on thermal image modeling of vehicles in the outdoors environments
 - Worked on automatic target recognition of FLIR images
- **Teaching Experience:** *Spring 1996 and Spring 1997: Teaching Assistant*
 - Taught Pharmaceutics II in College of Pharmacy, UT-Austin. Held the office hours and answered students' questions in 1995.
 - Gave the lectures on Introduction to Chemical Practice in the department of Chemistry at UT-Austin in Spring 1996 and Spring 1997. Created each lesson plan for various classes. Assisted students with experiments
- **Research Experience:** *July 1992 - January 1994*
Dept. of Biomedical Eng., Peking Union Medical College
 - Worked on the R-wave detection of electro-cardiography (ECG) for intra-aortic balloon pump trigger machine.
 - Worked on animal experiments on testing the performance of IABP.
 - Worked on data compression of ECG using neural networks
 - Worked on ECG classification using neural networks
 - Worked on the modeling of the pharmacokinetics

Computer Skills

- *Design Tools:* MATLAB, Ptolemy,
- *Operating Systems:* UNIX, Linux, Windows 95/NT, DOS
- *Programming Languages:* C/C++, Java
- *Assembly Languages:* Z80, Motorola 68HC11, TMS320C30
- *Development tools:* Emacs, GNU debugger, Purify, Make, source code control (SCCS and RCS).

Professional Activities

- Student Member in Signal Processing, Communications, and Computer Society, IEEE
- Reviewer for refereed journals
 - IEEE Transactions on Image Processing
 - Signal Processing Letters
 - Journal of Laboratory Technology for Bioresearch: BioTechniques

- Reviewer for technical conferences
 - IEEE International Conference on Acoustics, Speech, and Signal Processing, 2000
 - IEEE-EURASIP Workshop on Nonlinear Signal and Image Processing, 1999
 - IEEE International Symposium on Circuits and Systems, 1999
 - IEEE Southwest Symposium on Image Analysis and Interpretation, 1998

Honors and Awards

- Professional Development Award from The University of Texas at Austin in May 1999.
- Awarded the scholarship for the Excellent Students in Natural Sciences, provided by the Taiwan (China) Sharp Group (1991)

Leadership

- I was a lab manager for the Embedded Signal Processing Laboratory from September, 1998 to May, 2000.
- I have participated in the organization of second Far Eastern Conference on Medical and Biomedical Engineering (FECMBE '93), August 13-18, Beijing, P.R.China, 1993.

Courses Taken at UT

1. Digital Signal Processing: Dr. A. C. Bovik
2. Advanced Signal Processing: Dr. F. A. Sakarya
3. Multidimensional Digital Signal Processing: Dr. Brian L. Evans
4. Real-time Digital Signal Processing: Dr. B. L. Evans
5. Digital Image Processing: Dr. A. C. Bovik
6. Advanced Computer Vision: Dr. J. K. Aggarwal
7. Vision System: Dr. B. Geisler
8. Optimization in Engineering Systems: Dr. R. Baldick
9. Embedded Software Systems: Dr. Brian L. Evans
10. Introduction to Telecommunication, Prof. S. Tawil
11. Digital Communications: Dr. G. Xu
12. Communication Networks and Protocols: Dr. G. de Veciana
13. Probability and Stochastic Processes: Dr. G. de Veciana
14. Information Theory: Dr. G. de Veciana
15. Wavelets: Theory and Applications: Dr. J. Gilbert

16. Integral Transform: Dr. W. Guy
17. Real Analysis: Dr. V. Mascioni
18. Engineering Programming Languages: Dr. C. Chase
19. Neural Networks: Dr. R. Miikkulainen
20. Research Problem with Dr. Brian L. Evans

Fluent Languages

- Chinese (native language) and English.

Publications

1. Biao Lu, Lloyd D. Clark, Güner Arslan, and Brian L. Evans, "Fast Time-Domain Equalization for Discrete Multitone Modulation Systems", *IEEE Digital Signal Processing Workshop*, Hunt, Texas; October 15-18, 2000.
2. Biao Lu, Lloyd D. Clark, Güner Arslan, and Brian L. Evans, "Divide-and-Conquer and Matrix Pencil Methods for Discrete Multitone Equalization," *IEEE Transactions on Signal Processing*, submitted.
3. Biao Lu and Brian L. Evans, "Channel Equalization by Feedforward Neural Networks," *Proc. IEEE Int. Sym. on Circuits and Systems*, May 30-Jun. 2, 1999, Orlando, FL, vol. 5, pp. 587-590.
4. Biao Lu, Dong Wei, Brian L. Evans, and Alan C. Bovik, "Improved Matrix Pencil Methods", *Proc. IEEE Asilomar Conf. on Signals, Systems, and Computers*, Pacific Grove, CA, pp. 1433-1437, Nov. 1-4, 1998.
5. Biao Lu, Brian L. Evans, and Dejan V. Tomic, "Simulation and Synthesis of Artificial Neural Networks Using Dataflow Models in Ptolemy," *Proc. IEEE Conf. on Neural Network Applications in Engineering*, Sep. 8-9, 1997, pp. 114-119.
6. Biao Lu, Shuling Yang, "The Recent Development of the Biosensor (Review)," *Information of Medical Equipment*, vol. 7, no. 2, pp. 9-11, April, 1992 (in Chinese).
7. Kai Ouyang, Biao Lu, Bin Zhang, Na Qi, and Yan Yan, "The Research of the Data Compression of the ECG using the Neural Network," *Proc. International Symposium on Biomedical and Rehabilitation Engineering*, Shanghai, P.R. China, Sep. 24-26, 1992, pp. 242-244.
8. Kai Ouyang, Biao Lu, Weifang Liu, Bin Zhang, Na Qi, and Yan Yan, "The Neural Network for the ECG data compression," *Proc. National Conference on Medical Engineering and Biological Cybernetics*, Ningde, Fujian, P.R. China, Oct. 7-9, 1992, pp. 48.

References: available on requests