

**XINDI CAI**  
cai@umr.edu

1821 White Columns Dr. Apt 59  
Rolla, Missouri 65401  
Cell: (573)-202-0565

**OBJECTIVE** To obtain a full-time position in the field of Electrical Engineering

<b>EDUCATION</b>	University of Missouri-Rolla (UMR)	Rolla, Missouri	June 2002-Dec. 2004
	Ph.D. Candidate in <b>Electrical Engineering</b>		<b>GPA 3.8/4.0</b>
	University of Missouri-Rolla (UMR)	Rolla, Missouri	1999-2002
	M.S. in <b>Computer Engineering</b>		<b>GPA 3.6/4.0</b>
	Northwestern Polytechnical University (NPU)		1992-1996
	B.E. in <b>Information Engineering</b>	Xi'an, China	<b>Top 5 in class</b>

<b>RESEARCH EXPERIENCE</b>	<b>UMR Electrical and Computer Engineering Department</b>	Rolla, MO
	<b>Research Assistant</b>	Aug 1999-Present

**FSK communication system on Analog Devices DSP chips**

- Designed frequency generator/receiver (freq. adjustable) and bit sender/decoder
- Developed automatic bit and frame synchronization
- Achieved high transmission speed (max 3K bps)
- Insensitive to additive white noise

**VLSI design of 1-Wire Psuedorandom Number (PRN) Generator**

- Designed the custom chip to response reset/presence pulse and several 8-bit commands, to transmit 64-bit PRN and ROM data through a 1-wire interface
- Simulated the VHDL design with *Quicksim II*
- Implemented the design on an *Actel 40MX02 FPGA*, only 284 logic models used

**Developing game Go software**

- Massive programmed on game engine with *C/C++* (3000+ lines)
- Designed game GUI with *JAVA/OPENGL*

**Time series data analysis and prediction**

- Analyzed dynamic time series data with novel model/algorithms
- Executed CATS data prediction within one week and ranked the second out of 24 worldwide in the IJCNN04 competition
- Perfectly deciphered a numerically coded text and won the second prize in IJCNN01 text decoding competition

<b>NPU Computer Science and Engineering Department</b>	Xi'an China
<b>Research Assistant</b>	1992-1996

- Designed and implemented intelligence devices with microprocessor
- Conducted research on pattern recognition and image processing

<b>WORK EXPERIENCE</b>	<b>Lucent Technologies, Bell Lab Innovations</b>	Qingdao, China
	<b>System Testing Engineer</b>	1996-1999

- Led a group in several Switching System (5ESS) testing projects
- Provided diagnostic and trouble-shooting support on major products
- Performed customer technique support, both onsite and remote
- Co-operated with Bell Lab engineers in STP developing and testing

## PUBLICATIONS

- Xindi Cai, Nian Zhang, Ganesh K. Venayagamoorthy and Donald C. Wunsch II, "Time series prediction with recurrent neural networks using hybrid PSO-EA algorithm," *Proceedings of IJCNN04*, Budapest 2004.
- Xindi Cai, Ganesh K. Venayagamoorthy and Donald C. Wunsch II, "Evolutionary swarm neural network game engine for capture Go," Submitted to *IEEE Trans. on Evolutionary Computation*, August 2004.
- Xindi Cai, Danil V. Prokhorov and Donald C. Wunsch II, "Training winner-take-all simultaneous recurrent neural networks," Submitted to *IEEE Trans. on Neural Networks*, May 2003.
- Xindi Cai and Donald C. Wunsch II, "Counterexample of a claim pertaining to the synthesis of a recurrent neural network," *Proceedings of IJCNN02*, Vol. 3, pp. 2029 - 2032, Honolulu, 2002.
- Xindi Cai, Rui Xu, V. A. Samaranyake and Donald C. Wunsch II, "A statistical solution to a text decoding challenge problem," *Proceedings of IJCNN01*, Vol. 2, pp. 1043 - 1046, Washington DC, 2001.
- Xindi Cai and Donald C. Wunsch II, "A parallel computer Go player, using HDP method," *Proceedings of IJCNN01*, Vol. 4, pp. 2373 - 2375, Washington DC, 2001.

## HONORS & ACTIVITIES

- Second prize, worldwide, on the time series prediction challenge problem in International Joint Conference on Neural Networks 2004
- Second prize, worldwide, on the time series text decoding challenge problem in International Joint Conference on Neural Networks 2001
- Student travel grant for International Joint Conference on Neural Networks 2002
- Excellent Student Scholarship of Northwestern Polytechnical University

## COMPUTER SKILLS

- **Application Software:** Quicksim MATLAB, MS-Office, MPI
- **Programming Languages:** C/C++, FORTRAN, Assembly Language, JAVA, OPENGL, VHDL, HTML
- **Operating Systems:** Windows 95, 98, 2000, NT, XP, DOS, Unix
- **Net Tools:** Internet Explorer, Netscape Navigator

## COURSES

Advanced Neural Networks, Neural Networks for Control, Advance Parallel Programming, Digital Signal Processing, Real-Time DSP, Advanced Digital Signal Processing, System Simulation & Identification, Object-Oriented Analysis and Design, JAVA GUI & Visualization, Introduction to VLSI Design, High Speed Digital Design

## COMMUNITY ACTIVITIES

- Student member of IEEE and Computational Intelligence Society
- Student member of International Neural Network Society
- Review committee member of International Joint Conference on Neural Networks 2002 – 2004
- Paper reviewer of ANNIE 2001 - 2003