Bin (Crystal) Peng, Ph.D.

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Southwestern College
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Objective

To achieve a distinguished career in Education and Research in Computer Science

Professional Experience

Assistant Professor (tenured), *August 2006 - present*
Department of Computer Science, Southwestern College, Winfield, KS

Assistant Administrator (volunteer), *February 2006 - October 2006*
A Knock At Midnight, Chicago, IL

Lecturer, Graduate Teaching/Research Assistant, *August 2001 - December 2005*
Department of Computer Science, Wayne State University, Detroit, MI

Education

Ph.D., **Computer Science**, *August 2005*
Wayne State University, Detroit, MI
Dissertation: Knowledge Swarms in Cultural Algorithms for Dynamic Environments
Advisor: Dr. Robert Reynolds

Graduate Certificate for College and University Teaching, *December 2004*
College of Education, Wayne State University, Detroit, MI
Advisor: Dr. Timothy W. Spannaus

M.S., Engineering, *July 2001*
Chinese Academy of Sciences, Beijing, China
Thesis: Genetic Algorithms in Computer Aided Qualitative Spectral Analysis
Advisor: Prof. Keling Liu

B.S., **Computer Science and Engineering**, *June 1998*
Nanjing Institute of Meteorology, Nanjing, China

Honors and Awards

Career Mentoring Workshop for Women Faculty. Computing Research Association – Women (CRA-W) ……………………………………...……………………………. 2009
Garrett T. Heberlein **Excellence in Teaching Award** for Graduate Students. Wayne State University (two recipients each year) …..…………………………………… 2004

Graduate Recognition Award for **Exceptional Teaching** Service. College of Science, Wayne State University ……..……………………………….…………….... 2003, 2005

Michael E. Conrad **Graduate Student Research Award Nomination**. Wayne State University ……..…………………………………………………………………… 2005

Teaching Experience

Assistant Professor of Computer Science, *August 2006 - present*
Southwestern College, Winfield, KS

Teach undergraduate level Computer Science courses for both majors and non-majors. Coordinate the Computer Science program housed in the Division of Computer Science and Communication:

- Teaching
  - Develop and teach undergraduate level Computer Science courses
  - Coordinate with other departments in course development and delivery for non-majors
  - Support course delivery through Blackboard and self-maintained servers
- Advising
  - Provide individual advising to major and prospective students on course scheduling, career choice, and admission
- Program Coordinator
  - Revise Computer Science curriculum and oversee the running of the program
  - Establish connections with community, industry, academia for extra-curriculum activities, student internship, and post-graduation placement
- Courses Developed and Taught:
  - CPTR110 Introduction to Computer Systems
  - CPTR112 Programming 1 (C++)
  - CPTR212 Programming 2 (C++)
  - CPTR306 Visual Basic Programming
  - CPTR310 Theory of Programming Languages
  - CPTR315 Java Programming
  - CPTR320 Database Management Systems
  - CPTR324 Computer Networks
  - CPTR341 Operating Systems
  - CPTR345 Software Engineering
  - CPTR430 Introduction to Artificial Intelligence
  - CPTR452 Automata
  - CPTR453 Analysis of Algorithms
  - CPTR454 Senior Project

Assistant Administrator (volunteer), *February 2006 - October 2006*
A Knock At Midnight, Chicago, IL
(A non-profit technology center serving low-income families and youth in African-American community)

- Provided technology support for the computer literacy training and the Illinois Teen REACH (Responsibility, Education, Achievement, Caring and Hope) program
- Performed regular maintenance & updates on lab computers

Teaching Assistant (Volunteer), *February 2006 - April 2006*
Poder Learning Center, Chicago, IL
(A non-profit volunteer-based Latino community learning center)
- Taught beginning-level ESL courses in small group and assisted students in regular class meetings
- Provided one-on-one tutoring, computer support, and practice to students

Lecturer / Lab Instructor / Teaching Assistant, *August 2001 – August 2005*
Department of Computer Science, Wayne State University

Taught undergraduate, graduate level major courses and service courses for non-majors. Depending on assigned teaching positions, the main teaching responsibilities included:
- Developed and taught courses independently
- Conducted laboratory classes in parallel with lecture sessions
- Supported course delivery using Blackboard and self-maintained websites
- Supervised/coordinated with other teaching staff in the team
- Participated in department curriculum design

- Courses Taught:
  o CSC2000 Introduction to C++ Programming Language (Lecturer, Lab Instructor)
  o CSC2110 Introduction to Data Structures and Abstraction (Lecturer, Lab Instructor)
  o CSC4991 Java Programming (Lecturer)
  o CSC5050 Algorithms and Data Structures (Lab Instructor)
  o CSC3200 Programming Languages (Teaching Assistant)
  o CSC4100 Computer Architecture (Teaching Assistant)
  o CSC4500 Introduction to Theoretical Computer Science (Teaching Assistant)
  o CSC6800 Artificial Intelligence I (Teaching Assistant)

Advised Senior Project

- Scott Rethorst, *A Camp Management System for Horizon Camp*. Spring 2012
- Charles Stanfield, *Resource Manager for Real Time Strategy (RTS) Games*. Spring 2011
- Nick Crawley, *Path-Finding in Unity: AI in Gaming System*. Fall 2010
- Cory Talbott, *An Online Multi-Player Chess Game with IRC and Flash*. Spring 2010
- Amanda Nygren, *A GUI Calculator with User Programmed Functions*. Spring 2010
- John Marolf, *A Web-based Equipment Checkout System with PHP and MySQL*. Fall 2009

- Clint Kissling, *A GUI To-Do List with VBScript*. Spring 2009
- Francisco Lara, *Elude – A GUI Process Management Tool under Windows*. Fall 2008
- Joseph Kreft, *Build an Online Community – A Website for SC Athletic Department*. Fall 2008
- Tim Moore, *Alumni Honor Roll Report for SC Institutional Advancement*. Fall 2008
- Cory Talbott, *Grid Computing with MapReduce*. Fall 2008
- Eric Dickson, *Build AI Worlds with NetLogo*, Fall 2007
- Jeremy Groom, *Moodle Plugin – LDAP Authentication for Admin*, Fall 2007
- Andrew Merz, *A Web-based Help Desk System for SC Computer Information Center*. Fall 2007

Research Experience

Assistant Professor of Computer Science, *August 2006 - present*
Southwestern College, Winfield, KS
- Explore research potential in Computer Science Education

Graduate Research Assistant, *August 2001 - December 2005*
Artificial Intelligence Laboratory, Wayne State University, Detroit, MI
Project: Knowledge Swarms in Cultural Algorithms for Dynamic Environments
- Researched on effect of multi-source knowledge in multi-agent system under NSF grant
- Designed tracking strategy for dynamic environments and proposed algorithm for synergy of different categories of knowledge
- Developed software and analysis tool which has been used for continuing research in the laboratory and provided for international researchers

Graduate Research Assistant, *September 1998 - July 2001*
Institute of Process Engineering, Chinese Academy of Sciences, Beijing, China
Project: Spectral Analysis with Genetic Algorithm
- Devised a Genetic Algorithm based spectral analysis system
- Built the software system for a Chinese Science & Technology Department funded project
- Resulting system (software and hardware) employed in routine analysis in the spectra laboratory

Undergraduate Research Assistant, *January 1998 - June 1998*
Dept. of Mathematics, Nanjing Institute of Meteorology, Nanjing, China
Project: Investigation of El Nino Forecasting with Fractal Method
- Developed software in C for El Nino analysis and forecasting for a Chinese NSF funded joint project between Dept. of Mathematics and Dept. of Meteorology
- Assisted mathematic modeling and led system testing and analysis

Publication

- **Journal**

Robert G. Reynolds, **Bin Peng**. *The Role of Culture in the Emergence of Decision-Making Roles: An Example Using Cultural Algorithms*. GESTS International Transactions on Computer Science and Engineering. 32(1). June 2006 (invited paper)

Robert G. Reynolds, **Bin Peng**. *Cultural Algorithms: Computational Modeling Of How Cultures Learn To Solve Problems: An Engineering Example*. Cybernetics and Systems. November 2005

Robert G. Reynolds, **Bin Peng**. *Knowledge Learning and Social Swarms in Cultural Systems*. Journal of Mathematical Sociology. 29:1-18, 2005

- **Refereed Conference Proceedings**

Robert Reynolds, **Bin Peng**, Raja' Alomari. *Cultural Evolution of Ensemble Learning for Problem Solving*. IEEE The Congress on Evolutionary Computation. July 2006, Vancouver, BC, Canada

Robert Reynolds, **Bin Peng**, Xiangdong Che. *Knowledge Swarms: Generating Emergent Social Structure in Dynamic Environments*. Agent Conference on Generative Social Processes, Models, and Mechanisms. October 2005, Chicago, Illinois

Robert G. Reynolds, **Bin Peng**, Robert Whallon. *Emergent Social Structures in Cultural Algorithms*. Annual Conference of the North American Association for Computational Social and Organizational Science. June 2005, Indiana

Robert G. Reynolds, **Bin Peng**. *Cultural Algorithms: How Cultures Learn to Solve Problems*. Proceedings of the 16th IEEE International Conference on Tools with Artificial Intelligence. 166-172. November 2004, Boca Raton, Florida

Bin Peng, Robert G. Reynolds. *Cultural Algorithms: Knowledge Learning in Dynamic Environments*. Proceedings of IEEE the Congress on Evolutionary Computation. 1751-1758. June 2004, Portland, Oregon

Robert G. Reynolds, **Bin Peng**. *Using Cultural Algorithms to Program Reversibly Switching Surfaces*. European Meetings on Cybernetics and Systems Research. April 2004, Vienna, Austria

Robert G. Reynolds, **Bin Peng**, Jon J. Brewster. *Cultural Swarms II: Virtual Algorithm Emergence*. IEEE The Congress on Evolutionary Computation. 1972-1979. December 2003, Canberra, Australia

Bin Peng, Robert G. Reynolds, Jon J. Brewster. *Cultural Swarms*. IEEE The Congress on Evolutionary Computation. 1965-1971. December 2003, Canberra, Australia

Robert G. Reynolds, **Bin Peng**, Jon J. Brewster. *Cultural Swarms: Knowledge-Driven Problem Solving Social Systems*. IEEE International Conference on Systems, Man, and Cybernetics. 1828. October 2003, Washington D.C.

- **Presentations**

Robert G. Reynolds, **Bin Peng**, Robert Whallon. *The Marginal Value Theorem for Knowledge Integration in Cultural Algorithm*. 2005 The Society for American Archaeology 70th Annual Meeting. April 2005, Salt Lake City, Utah

Robert G. Reynolds, **Bin Peng**. *The Role of Culture in the Emergence of Decision-Making Roles.* 2004 International Conference on Complex System. May 2004, Boston, Massachusetts

- **Abstract**

Robert G. Reynolds, **Bin Peng**. *Using Cultural Algorithms to Program Reversibly Switching Surfaces*. 2004 NASA/DoD Conference on Evolvable Hardware. June 2004, Seattle, Washington

Service

- **College/University**

Undergraduate Advisor, Computer Science. *Southwestern College* …….. 2006 - present
Admission & Retention Committee ……………………………...…..… 2011 - present
Diversity Council ……………………………………………..…..… 2011 - present
Faculty Advisor for Computer Programmer Club ………………..…… 2008 - present
Assessment Committee ……………………………………...………. 2007 - 2011
SC Woman's Connect ………………………………………....… 2008 - 2010
Planning Council …………………………………………………….. 2007 - 2010
Planning Committee for 2009 OWHE (Office for Women in Higher Education) Kansas State Conference ……………………………………………….… 2009
Application Power User Group (APUG) …………………………….. 2008 - 2009
Vice Chair of Curriculum Committee ………………………...……… 2006 - 2007
Regional ACM International Collegiate Programming Contest …………… 2006, 2007

President of ACM Student Chapter. *Wayne State University* …..……...… 2004 - 2005
FY06 Salary Review Committee. College of Liberal Arts and Sciences 2005
Selection Committee. Heberlein Award for Excellence in Teaching for Graduate Students. Graduate School …………………………………………….... 2005
Organizer and Team Coach for WSU Team. Regional ACM International Collegiate Programming Contest ……………………………………………….… 2004
Panelist for Graduate Teaching Assistant Orientation. Graduate School ………..… 2004
Marshall for University Commencement ………………………..……… 2003, 2004
Graduate Teaching Assistant Mentor ………………………………….. 2002, 2003

- **Professional**

Session Chair for ACM Technical Symposium on Computer Science Education (SIGCSE) …………………………………………………..…..….. 2010, 2011

Conference Paper Reviewer. SIGCSE ……………………….……. 2010, 2011, 2012
Conference Paper Reviewer for Consortium for Computing Sciences in Colleges: Central Plains region (CCSC : CP) ……..…………………………………….. 2011, 2012
NSF Panelist. NSF CISE Pathways to Revitalized Undergraduate Computing Education Program (CPATH) Program …………………………………………... 2009
Journal Reviewer. IEEE Transactions on Evolutionary Computation . 2004, 2005, 2008
Regional Contest Judge. ACM International Collegiate Programming Contest (North Central North America Regional) …………………………………………..…. 2006, 2007
Journal Reviewer. IEEE Transaction on System, Machine, and Cybernetics ……. 2006
Conference Reviewer. IEEE Congress on Evolutionary Computation …….. 2004, 2006

- **Community**

Computer Science Advisory Board, Winfield High School, KS ………... 2011 - present
Senior Exit Interview. Winfield High School, Winfield, KS ……..…… 2009, 2010, 2011
Mentor. The Cowley County 4-H Tech Wizards Day Camp, Winfield, KS …..….. 2011
International Day Sponsor. Burden Jr./Sr. High School, Burden, KS ……… 2008, 2009
High School Debate Judge. Winfield High School, Winfield, KS ………..……… 2007
Volunteer. Winfield Recreation Center Family Fun Night, Winfield, KS ……...... 2007
Guest Speaker. Burden Jr./Sr. High School, Burden, KS …………………….... 2007
PIT Admin Assistant. FIRST (For Inspiration and Recognition of Science and Technology) High School Robotics Competition, Detroit, MI ……....…………… 2005

Professional Development

Visual Programming to Media: Approaches to Starting Computing, *July 2010*
Univ. of Massachusetts at Amherst, Amherst, MA
> Two-day workshop on material appropriate for introductory Computer Science courses and k-12 students. The topic included brief introductions to visual programming in Alice and Scratch and techniques for motivating textual programming in Java and Python for manipulating media.

Intel Academic Summer Parallel Program Workshop, *July 2009*
UIUC, Champaign, IL
> Two-day lecture and lab course on multi-core parallel program and curriculum design. Network with Intel and faculty members from other institutions and seek possible opportunities for student summer research experience.

Alice Summer Institute, *June 2009*
Carnegie Mellon University, Pittsburgh, PA
> A one-week workshop on teaching introductory programming with graphic programming software Alice and recruiting students at college level and high school level into Computer Science.

CRA-Women Career Mentoring Workshop, *March 2009*

Chattanooga, TN

CRA-W sponsored Career Mentoring Workshops (CMW) brings junior female educators together with women already established in their fields. The established professionals provide practical information, advice, and support to their younger colleagues.

Teach Scheme Reach Java workshop, *June 2008*

California State Polytechnic, San Luis Obispo, CA

Workshops on teaching first year program using function programming language and transition from function programming language to procedure programming language.

Sunrise Toastmaster Club, August 2006 – April 2007

Toastmaster International, Wichita, KS

Weekly meetings on developing public speaking and leadership skills through practice and feedback in local clubs

Student Writing in Undergraduate Courses, February 2005

Office for Teaching and Learning (OTL), Wayne State University

Completed course in student writing assessment and its application in university teaching.