Dr Xiaolin Chen

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Research interests

Algorithms: signal processing, image/video processing/coding, computer vision, statistical modeling, machine learning, information theory

Hardware: FPGA design, reconfigurable computing

Education

Feb 2006–Feb 2010	PhD in Signal Processing, Department of Electrical and Electronic Engineering, University of Bristol, UK. Thesis title: *Algorithms and Architectures of Lossless Image and Video Compression*. Supervisors: Dr Jose Nunez-Yanez and Professor Nishan Canagarajah.
May 2009–August 2009	Visiting Student at the Laboratory for Perception, Action and Cognition (LPAC) in the Computer Science and Engineering Department of the Pennsylvania State University, USA. Research Project: *Image Compression based on Synthesis of Near-Regular Texture*. Advisor: Professor Yanxi Liu.
2004–2005	MSc in Microelectronics Systems Design, School of Electronics and Computer Science, University of Southampton, UK. Dissertation title: *Behaviour Modeling, Simulation and Test of MEMS using Artificial Neural Networks in VHDL-AMS*. Supervisor: Professor Mark Zwolinski.
2000–2004	BEng in Information Engineering, School of Information Engineering, Beijing University of Posts and Telecommunications. Graduate project: *Quaternary Soft Decision Frequency-Spreading Modulating System Design Using VHDL*. Grade: A.

Work Experience

Apr 2010–	Research Assistant in the Signal Processing Group, Merchant Venturers' School of Engineering, University of Bristol, UK, funded by European Space Agency.
Feb 2006–Feb 2009	Research Associate in the Signal Processing Group, Department of Electrical and Electronic Engineering, University of Bristol, UK.
Summer 2003	Intern Engineer Assistant in Guangdong Planning and Designing Institute of Telecommunications, Guangdong, China.

Awards and honours

2009 Jan	Worldwide University Network (WUN) - Research Mobility Program (RMP) Studentship, funding for a research visit to the Pennsylvania State University, on the project of image compression based on synthesis of near-regular texture.
2008 Dec	Best Paper Award, in the Conference on Design and Architectures for Signal and Image Processing (DASIP 2008), Brussels, Belgium.
2001–2002	Outstanding Undergraduate Studentship, for top 10% students, Beijing University of Posts and Telecommunications, China.
2001	4th Award in Science and Technology Knowledge Contest, university level competition, Beijing University of Posts and Telecommunications, China.
2000	3rd Award in Network Knowledge Contest, university level competition, Beijing University of Posts and Telecommunications, China.

Publications

- X. Chen, N. Canagarajah and J. L. Nunez-Yanez, "Lossless Video Coding using Fast Pixel-based Motion Estimation", in journal submission, 2010.
- X. Chen, N. Canagarajah and J. L. Nunez-Yanez, "Lossless Multi-Mode Image Compression and its Application in Space Imagery", 2nd International Workshop on On-Board Payload Data Compression (OBPDC), CNES, Toulouse, France, October 2010.
- X. Chen, N. Canagarajah and J. L. Nunez-Yanez, "Lossless Multi-Mode Interband Image Compression and Its Hardware Architecture", in the book *Algorithm-Architecture Matching for Signal and Image Processing*, Lecture Notes in Electrical Engineering, Springer, Vol. 73, 2010.
- X. Chen, N. Canagarajah and J. L. Nunez-Yanez, "Backward Adaptive Pixel-based Fast Motion Estimation", *IEEE Signal Processing Letters*, vol.16, issue 5, pp. 370-373, 2009.
- X. Chen, N. Canagarajah and J. L. Nunez-Yanez, "Lossless Multi-mode Interband Image Compression and its Hardware Architecture", *Conference on Design and Architectures for Signal and Image Processing (DASIP 2008)*, Brussels, Belgium, November, 2008. ***(Best Paper Award)***
- J.L.Nunez-Yanez, X.Chen, N. Canagarajah and Raffaele Vitulli, "Statistical Lossless Compression of Space Imagery and General Data in a Reconfigurable Architecture", Invited Paper, *NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2008)*, Noordwijk, the Netherlands, June 2008.
- X. Chen, N. Canagarajah, J. L. Nunez-Yanez and Raffaele Vitulli, "Lossless Compression for Space Imagery in a Dynamically Reconfigurable Architecture", *Workshop in Applied Reconfigurable Computing*, Lecture Notes in Computer Science 4943, pp.336-341, London, 2008.
- J.L.Nunez-Yanez, X.Chen, N. Canagarajah and Raffaele Vitulli, "Dynamic Reconfigurable Hardware for Lossless Compression of Image, Video and General Data Content", Invited Paper, *XXII Conference on Design of Circuits and Integrated Systems (DCIS 2007)*, Seville, Spain, November 2007.
- X. Chen, N. Canagarajah, J. L. Nunez-Yanez and Raffaele Vitulli, "Hardware Architecture for Lossless Image Compression Based on Context-based Modeling and Arithmetic Coding", *IEEE International SOC Conference (SOCC 2007)*, Hsinchu, Taiwan, September, 2007.

Software

Byacom3: universal lossless data/image/video compression system, in C and C++.

Other Presentations given

Nov 2007	Seminar talk in the Department of Electrical and Electronic Engineering, University of Bristol.
Oct 2006	Poster presentation in The Institution of Engineering and Technology Postgraduate Workshop on Embedded Systems, Birmingham.

Seminars, workshops and lecture courses attended

Nov 2007	Lecture courses on Financial time series, ARCH and GARCH models, in the Department of Mathematics, University of Bristol.
Nov 2007	Workshop on C-based FPGA design, Rutherford Appleton Laboratory, Microelectronics Support Centre, Oxfordshire.
May 2007	FPGA Seminar by the National Microelectronics Institute, Heriot-Watt University, Edinburgh.
Aug 2007	Postgraduate Training Workshop, Department of Electrical and Electronic Engineering, University of Bristol.

Ongoing Collaborating Projects

- European Space Agency, *Universal Lossless Compression on General Data, Image and Video based on Statistical Modeling and Arithmetic Coding, and its Reconfigurable Hardware Architecture*.
- Prof. Yanxi Liu, Pennsylvania State University. *Image Compression based on Synthesis of Near-Regular Texture*.
- Dr Piotr Fryzlewicz, London School of Economics and Political Science. *Unbalanced Haar Transform for Image Processing*.

Computer Skills

Specialised packages, programming languages and operating systems: Matlab, R, C/C++, VHDL, Verilog, Xilinx ISE, ModelSim, Linux, and others.

Professional Commitments and Membership

- Reviewer for IEEE International Conference on Acoustic, Speech, and Signal Processing (ICASSP 2008, 2009, 2010)
- Reviewer for IEEE Transaction on Image Processing

Personal Development Courses Completed

- Awards in Management, leading to a level 5 management certificate, City of Bristol College.
- Effective Networking in Research, Staff Development, University of Bristol.
- Presentation with Confidence and Flair, Staff Development, University of Bristol.

Teaching and Student Tutoring

2009 Oct–2009 Dec	Demonstrator in the lab of Digital System, University of Bristol.
2009 Jan–2009 May	Teaching Assistant in the lab of Electronic Design Automation, University of Bristol.
2007/2008	Co-advising Mr Peter Robinson's MEng project on *Lossless Compression on Multi-band Images and HD Images*, Department of Electrical and Electronic Engineering, University of Bristol.

Outreach

- 2008: Science Alive, demonstrating scientific experiments to general public, City Centre, Bristol.
- 2006: University of Bristol Open Day, helper.

Personal details

- Date of birth: 23 June 1981.
- Nationality: Chinese.