

Yegang Tao

Personal Information

Gender: Male Date of birth: 22/03/1977
Nationality: P. R. China

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Brief Biography

My first degree was honored in 1999 as the Bachelor in Computer Science and Technology from Tsinghua University, one of the top-five universities in China. After that I worked in industry for HP-China as a software engineer on the development of applications for handheld PC; and for CS&S as a senior software engineer on a national project, where I was responsible for the design of IC card transaction systems. I came to UK in 2001 and began to pursue PhD in Computing Science at the University of Glasgow. During the period of PhD study I have built strong knowledge in image coding and information theory. I also participated in several research projects and have successfully published my work in journal and conference papers. I completed my PhD course and passed the viva exam in Apr. 2005. Currently I am waiting for the issue of PhD, which will be in Oct. 2005.

Education

PhD, *Computer Vision Group, Dept. of Computing Science, University of Glasgow*, Glasgow, UK, Oct. 2001-Jun. 2005

Thesis – “Distortion-Constraint Compression of Three-dimensional CLSM Images using Image Pyramid and Vector Quantization”

BSc, (First class), *Dept. of Computer Science and Technology, School of Information Science and Technology, Tsinghua University*, Beijing, P. R. China, Sept. 1995-Jul. 1999

Thesis – “Three-Dimensional Modeling of an Axial-Symmetry Object from Its Three-Points Perspective Image”

Career Activities

- **Research Assistant** (part-time), *Dept. of Computing Science, Univ. of Glasgow*. Oct. 2004-Apr. 2005. Glasgow, UK.
Worked in the project – RACINE-S¹, which is funded by the European Commission, whose main goal is the research and design of new practical techniques for the reconstruction of missing scenes in the film sequence, based on the data extracted from the existing sequences. I worked in the core team, where we were responsible for the research of new algorithms to reconstruct the background and objects on the missing scenes.
PDTL²: Microsoft Visual Studio, C++, MATLAB and 3D-MAX.
- **Tutor** (part-time), *Dept. of Computing Science, Univ. of Glasgow*. Fall-Winter 2003-04. Glasgow, UK.
Tutoring Functional Programming 2.

¹ URL: <http://www.racine.eu.com/index.asp>

² PDTL: Primary Developing Tools and Language

PDTL: Haskell.

- **Demonstrator** (part-time), *Dept. of Computing Science, Univ. of Glasgow*. Fall 2001, Fall 2002. Glasgow, UK.
Demonstrating Programming Language 3.
PDTL: Assembly, JAVA.
- **Senior Software Engineer** (full-time), *Dept. of Networking and System Integration, China National Software and Service Company Limited (CS&S)*. Jun. 2000 - Sept. 2001. Beijing, P. R. China.
Worked in the project – Web-based Management and IC card (ICC)-based Transaction System of Fueling Service for Military Vehicles in Beijing Military Area, which was funded by Logistics Department of National Military Ministry. In this project, I led a team of three people, where our primary responsibilities involved the analysis, design and implementation of ICC-based transaction systems. We provided accurate and secure IC card transaction services for higher-level applications and also worked with other teams, such as the test team and the network and develop team, to integrate the ICC-based transaction systems into the main system.
PDTL: Microsoft Visual Studio, Borland Power Builder, ICC SDK from Schlumberger Co. Ltd, C++, and HTML.
- **Software Engineer** (full-time), *R&D Center, Hewlett Packard (China)*. Aug. 1999 - May. 2000. Beijing, P. R. China.
Worked in the project – The Mobile Environment of Flight Agent System. We cooperated with Civil Aviation Computer Information Centre to develop a practical reservation environment for mobile devices, including handheld computers and mobile phones. I was responsible for the client-side applications on the Handheld PCs (HPC). My primary tasks involved the conversion of the existing client-side reservation application, which is running on MS-Windows®, into MS-WindowsCE® platform, and the user-interface design of this application on the Hewlett-Packard Jornada 500 and 700 series HPC.
PDTL: Microsoft Embedded Develop Toolkit, HPC SDK from HP Co. Ltd, C++, and HTML.

Research Activities

My primary research study focuses on image coding and information theory. More specifically, I use multi-scale and quantization techniques to provide a more efficient representation of an image, whose applications include image compression and feature extraction. My research interests include *image compression*, *image processing* and *computer vision*.

Research Projects

- *Advanced Compression of Microscopic Images*. (Jan. 2002-Oct. 2004) Funded under Scottish Enterprise Proof of Concept and supervised by Dr. Cockshott from Dept. of Computing Science, Univ. of Glasgow. The basic concept is to provide user a high-performance and flexible approach to compress microscopic images, both individual image of one section and a sequence of images of the stack consisting multiple sections. It was awarded as Proof of Concept Award in 2002.
PDTL: Microsoft Visual Studio, Intel Image Processing Library, MATLAB, and C++.
- *Creation of Human Full-body Movement Library*. (Jan. 2004-Jul. 2004) A sub-project of *Recognition of Human Movement*, which is supervised by Dr. Pollick from Dept. of Psychology, Univ. of Glasgow. The purpose is to create a human full-body movement library for the study of biological-motion perception. My task was developing an automatic method to segment continuously repeated single-action movements into separated individual movements.

PDTL: 3D-MAX (Character Studio), MATLAB.

Publications

Journal Papers

- Y. Ma, F. E. Pollick, H. M. Paterson, **Y. Tao**, “Create a Human Full-body Movement Library for the Study of Biological-motion Perception”, *BRMIC - The Journal of Behavior Research Methods, Instruments & Computers*, Jan. 2005
- W. P. Cockshott, **Y. Tao**, G. Gao, P. Balch, A. M. Briones, C. Daly, “Confocal Microscopic Image Sequence Compression Using Vector Quantization and 3D Pyramids”, *SCANNING – The Journal of Scanning Microscopies*, Sept. 2003.

Conference Papers

- **Y. Tao**, W. P. Cockshott, “A hybrid Vector Quantizer for Laplacian Pyramid Coding with Application to Volumetric Image Compression in Confocal Microscopy”, *SPIE on Photonics Asia 2004*, China, Nov. 2004. (Oral presentation)
- **Y. Tao**, W. P. Cockshott, “3D Microscopic Image Coding by Finite-state Vector Quantization in An Enhanced Image Pyramid”, *SPIE on Medical Imaging 2004*, USA, Feb. 2004. (Oral presentation)
- **Y. Tao**, W. P. Cockshott, G. Gao, C. Daly, “Microscopic Volumetric Image Data Compression Using Vector Quantization and 3D Pyramid”, *Picture Coding Symposium 2003 (PCS'03)*, France, Apr. 2003. (Poster presentation)

Awards

- **Oversea Research Student Award (ORS)**, *Committee of Vice-chancellors and Principals of the University of the United Kingdom*, 2002-2004.
- **Dept. of Computer Science and Tech. Scholarship**, *Tsinghua University*, 1998.

Social Activities

- **Vice-president**, *Glasgow Chinese Students & Scholars Association (GCSSA)*, Jan. 2004 - present.
- **Webmaster**, *Univ. of Glasgow Chinese Society (GUCS)*, Nov. 2002 – May. 2004.

Referees

- **Dr. W. Paul Cockshott**, *my first academic supervisor of my current Ph.D research course.*
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Tel: +44 (0)141 330 3125
- **Dr. W. John Patterson**, *project coordinator in RACINE-S.*
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Tel: +44 (0)141 330 5323
- **Ms. Fang Liu**, *Project Manager.*
Addr: Building C, China National Software and Service Company Limited (CS&S), Beijing, 100080, P. R. China.
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