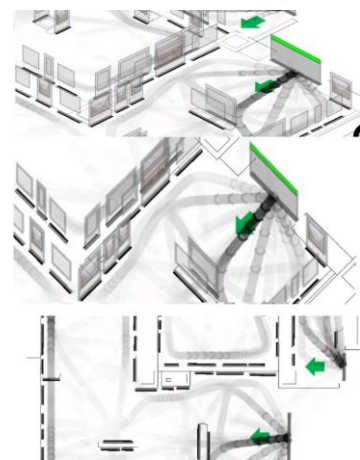


Paul Craig – CV

Nationality: British
Place and Date of Birth: Belfast (UK), 13-Aug-1974
Languages: English, Spanish (fluent)
Address: Room SD459, Xi'an Jiaotong-Liverpool University
111 Ren'ai Road, SIP, Suzhou, P. R. China, 215123
Email: p.craig@xjtlu.edu.cn, paulcraig99@gmail.com
Web: paulspapers.com

Profile

I am a highly motivated lecturer and programme director, and a world class researcher in the areas of Animated Information Visualisation and Mobile Information Visualisation. I have played a leading role in the development of innovative Visualisation techniques for a number of high profile international interdisciplinary research projects, including projects for Scottish Enterprise, the US National Science Foundation, the European Union and Mexican Conacyt. My research work is mainly focused on developing novel Visualisation techniques that make use of technological advances in computer science such as improved mobile device capabilities and improved inter-device connectivity.



Mobile app developed to visualise the flow of visitors around the *Romantic Scotland* exhibition at Nanjing Museum.

Work Experience

- Jul 2014 – Present **Lecturer**
Research Methods (MSc)
Professional Skills in Computer Science (BSc)
Administrative duties
Programme Director for MSc Applied Informatics and MRes Computer Science
Departmental Global Exchange Officer
Xi'an Jiao tong Liverpool University, Suzhou, China
- Nov 2010 – May 2014 **Lecturer and Researcher (Profesor/ Investigador)**
Distributed Database Systems (MSc), Human Computer Interaction (BSc, MSc), Database Systems (MSc), Information Retrieval (BSc)
Universidad Tecnológica de la Mixteca, Huajuapán de León, México
- Oct 2007 – Oct 2010 **Research Fellow**
Edinburgh Napier University
- Jun 2006 – Oct 2007 **Research Assistant**
Edinburgh Napier University

Education

- Oct 2001 – Jan 2006 **PhD**
- ***'Animated Interval Scatter-plot Views for the Exploratory Analysis of Large Scale Microarray Time-course Data'***
Edinburgh Napier University
Supervised by *Prof. Jessie Kennedy*, examined by *Prof. David Benyon* and *Dr Jonathan C. Roberts* (Bangor University)
- Oct 2000 – Oct 2001 **MSc (distinction), Software Engineering**
- ***'A Generic Information Visualization Tool for Tabular Data'***
Edinburgh Napier University
Supervised by *Prof. Jessie Kennedy*
- Oct 1994 – Oct 1997 **BSc Applied Physics with Micro-computing**
Edinburgh Napier University

Academic Positions

- Conference Chair/ Chief Organizer **Conference in Emerging Topics in Interactive Systems**
- Programme Committee **Information Visualisation**
(Information Visualisation Society/ IEEE)
- International Conference on Cognitronics**

Research Projects and Funding

- May 2013 – 2015 **Principal Investigator**
- **Conacyt/152/008 'Managing Small Group Behaviour for Collaborative Information Visualization and Learning'**
Part of multidisciplinary project
- **'Theories, Methods, and Models of Social Complexity'**
Conacyt (Mexico)
With support for publication fees, conference expenses and funding for the salary of two research assistants.
This is a three year project involving twenty-five different researchers from different groups around looking at how the theory of complex systems could be used to tackle specific social and economic problems facing Mexico. For our own part, we will investigate how people collaborate when learning or exploring data and determine how the more beneficial processes involved can be managed through different aspects of interface design.

- Jun 2013 – Jun 2014 **Desirable Research Profile**
Conacyt (Mexico)
 40,000 MXP
 To build a working lab to develop state of the art Information Visualization techniques.
- Sept 2011 – Jan 2013 **Principal Investigator**
 - **PROMEP/103.5/11/4427 ‘Information Visualization of Document Collection Structure for Information Retrieval’**
Conacyt (Mexico)
 361,834MXP (*maximum award*)
 This project investigated the use of animated information visualization to improve the process of information retrieval. It involved three case studies; the Dialogue Explorer, the Mexican History Browser and the Cluster Explorer. Each of these applications allowed the user to search and explore different types of data using animated visualisations optimised for legibility.

- Aug 2010 – Nov 2010 **Research Fellow**
 - **Companions**
European Union project
 An Artificial Intelligence project to develop and evaluate the Embodied Conversational Agent (ECA) Samuela.
- Oct 2007 – Oct 2009 **Research Fellow and Lead Developer**
 - **L/JR/POC/8-OET003 developing the software MatSE (the Microarray Time-series Explorer)**
Scottish Enterprise Proof of Concept
 ~250,000 GBP (*core team of 4 researchers*)
 To redevelop and extend the initial prototypes from my PhD project. The final version of MatSE allows users to visualize data with missing values, cross reference multiple conditions, highlight gene groupings, and collaborate by sharing their findings. The software was evaluated with academic and industrial partners from; the Institute of Cancer Sciences at the University of Glasgow; the Institute for Stem Cell Research, Edinburgh; the Scottish Crop Research Institute; CXR Biosciences, Dundee; and Queen’s Medical Research Institute, Edinburgh.
- Jun 2006 – Oct 2007 **Research Assistant**
 - the Science Environment for Ecological Knowledge (SEEK)
United States National Science Foundation (NSF)
 Responsible for developing the Concept Relationship editor application, a visual interface to support the assertion of synonymy relationships between taxonomic classifications.
-

Publications

Selected Highlights

P. Craig, N. Roa-Seiler, "**Empathetic Technology**," in **Emotions, Technology, and Design**, ed: Elsevier, 2016, pp. 55-81.

P. Craig, "**Interactive animated mobile information visualisation**," presented at SIGGRAPH Asia 2015 Mobile Graphics and Interactive Applications, Kobe, Japan, 2015.

P. Craig, A. Cannon, R. Kukla, and J. Kennedy, "**MaTSE: The gene expression time-series explorer**," BMC Bioinformatics (highlights of BioVis 2012), July 2013.

P. Craig, J. Kennedy, and A. Cumming, "**Animated Interval Scatter-plot Views for the Exploratory Analysis of Large Scale Microarray Time-course Data**," Information Visualization, vol. 4, pp. 149-163, Sept. 2005.

P. Craig, and J. Kennedy, "**Coordinated Graph and Scatter-Plot Views for the Visual Exploration of Microarray Time-Series Data**," in IEEE InfoVis, Seattle, Washington, USA, 2003, pp. 173-180.

2018

Keyu Chen, Hai-Ning Liang, Yong Yue and Paul Craig, "**Infrared Motion Detection and Electromyographic Gesture Recognition for Navigating 3D Environments**", the Journal of Computer Animation and Virtual Worlds (CAVW), Wiley

2017

Yahui Wang, Paul Craig, "**Vector Space Model Embedding for Recommender System Neural Networks**", 5th International Conference on Systems and Informatics. 2017.

Yue Tao, Yue Yong, Paul Craig "**A Hybrid Approach to Detection and Recognition of Dashboard Information in Real-time**", 5th International Conference on Systems and Informatics. 2017.

Ke Wan and Paul Craig, "**Mobile Mental Health Support for Chinese University Students**", presented at the 20th International Multiconference INFORMATION SOCIETY - IS 2017, Volume D. Kognitonika/Cognitonics. Uredila /Edited by Vladimir A. Fomichov, Olga S. Fomichova, <http://is.ijs.si>, 9.-13. oktober 2017/ 9th - 13th October 2017, Ljubljana, Slovenia.

Q. Hu, K. K. FungYuen, and P. Craig, "**Towards a recommendation approach for university program selection using Primitive Cognitive Network Process**," in Service Systems and Service Management (ICSSSM), 2017 International Conference on, 2017, pp. 1-4.

Qiankun Sheng and Paul Craig, "**A Survey for Wireless Sensor Networks**", presented at the 2nd Conference on Emerging Topics in Interactive Systems", Suzhou, China, 2017.

Zhiqiang Gao, Paul Craig, "**An evaluation for clustering library book collection based on student borrowing statistics**", presented at the 2nd Conference on Emerging Topics in Interactive Systems, Suzhou, China, 2017.

Meixun Qu, Paul Craig, and Nna Roa-Seler, "**The Effectiveness of Immersive Mobile Game for Chinese Vocabulary Sounds and Characters**", presented at the 2nd Conference on Emerging Topics in Interactive Systems, Suzhou, China, 2017.

2016

X. Huang, P. Craig, H. Lin, and Z. Yan, "**SecIoT: a security framework for the Internet of Things**," Security and communication networks, vol. 9, pp. 3083-3094, 2016.

J. Zhang, X. Huang, P. Craig, A. Marshall, and D. Liu, "**An improved protocol for the password authenticated association of IEEE 802.15. 6 standard that alleviates computational burden on the node**," Symmetry, vol. 8, p. 131, 2016.

Xu A, Li M, Cai J, Xue N, Zhang J, Liu D, Craig P, Huang X. **Improving Efficiency of Authenticated OpenFlow Handshake Using Coprocessors**. In Information Technology in Medicine and Education (ITME), 2016 8th International Conference on 2016 Dec 23 (pp. 576-580). IEEE.

S. Cox and P. Craig, "**Information Visualization Interfaces for Multi-Device Synchronous Collocated Collaboration**," presented at the 1st Conference on Emerging Topics in Interactive Systems, Suzhou, China, 2016.

P. Craig, H. Chen, and F. Houssen, "**A Task Based Evaluation of Fisheye Maps for Mobile Navigation**," presented at the 1st Conference on Emerging Topics in Interactive Systems, Suzhou, China, 2016.

P. Craig and Q. Hu, "**Location Based Games to Promote Physical Activity for Chinese University Students**," presented at the 1st Conference on Emerging Topics in Interactive Systems, Suzhou, China, 2016.

P. Craig and S. Tsikata, "**Diversity Based Human-Computer Information Retrieval for University Library Collections**," presented at the 1st Conference on Emerging Topics in Interactive Systems, Suzhou, China, 2016.

P. Craig, H. Wen, and X. Huang, "**The Calming Effect of 360 Degree Scenes Viewed using a Virtual Reality Headset**," presented at the 1st Conference on Emerging Topics in Interactive Systems, Suzhou, China, 2016.

F. Yang and P. Craig, "**Cookie Printer – A Prototype Application to Demonstrate Additive Manufacturing to Primary Age Children**," presented at the 1st Conference on Emerging Topics in Interactive Systems, Suzhou, China, 2016.

J. Zeyang, P. Craig, and H.-N. Liang, "**Evaluating Collaborative and Competitive Videogames for English Vocabulary Learning (best paper award)**," presented at the 1st Conference on Emerging Topics in Interactive Systems, Suzhou, China, 2016.

2015

P. Craig, **Interactive animated mobile information visualisation**, in SIGGRAPH Asia 2015 Mobile Graphics and Interactive Applications. 2015, ACM: Kobe, Japan. p. 1-6.

P. Craig, and X. Huang, **The Mobile Tree Browser: A Space Filling Information Visualization for Browsing Labelled Hierarchies on Mobile Devices**, in PICom 2015 : The 13th IEEE International Conference on Pervasive Intelligence and Computing. 2015: Liverpool.

P. Craig, et al., **Pervasive Information Visualization: Toward an Information Visualization Design Methodology for Multi-device Co-located Synchronous Collaboration**, in PICom 2015 : The 13th IEEE International Conference on Pervasive Intelligence and Computing. 2015: Liverpool.

P. Craig, and N. Roa Seiler (2015). **Empathetic Technology. Emotions, Technology, and Design**. S. Tettegah and S. U. Noble, Elsevier.

P. Craig, and X. Huang, **Animated Space-Filling Hierarchy Views for Security Risk Control and Visualization on Mobile Devices**, in 2015 International Conference on Environmental Engineering and Applied Technology (EEAT 2015) 2015: Hohhot, China.

P. Craig, N. Roa-Seiler, and Z. Wang, **An Ethnographic Study of Mobile Videogames for English Vocabulary Development in Urban China**, in Fourth International Conference on Cognitonics. 2015: Slovenia.

Huang, X., P. Craig, and Q. Wang. **Identity-Based Association Protocols for Wireless Personal Area Networks**. in The 13th IEEE International Conference on Dependable, Autonomic and Secure Computing (DASC-2015). 2015. Liverpool.

Guo, H., X. Huang, and P. Craig, **Factors Affecting the Adoption of Third-Party Online Payment**, in 2015 International Conference on Environmental Engineering and Applied Technology (EEAT 2015) 2015: Hohhot, China.

2014

P. Craig, N. Roa-Seiler, M. M. Díaz, and F. L. Rosano, "**A cognitonics approach to computer supported learning in the Mexican State of Oaxaca**," *Informatica*, vol. 38, p. 241, 2014.

P. Craig, N. R. Seiler, and A. D. O. Cervantes, "**Animated geo-temporal clusters for exploratory search in event data document collections**," in *Information Visualisation (IV)*, 2014 18th International Conference on, 2014, pp. 157-163.

P. Craig, N. Roa-Seiler, M. M. Díaz, and F. L. Rosano, "**Evaluating the Case for Computer Supported Face to Face Collaborative Learning to Supplement Traditional Primary Education in the Mexican State of Oaxaca**," in *INTED2014 Proceedings*, 2014, pp. 153-162.

N. Roa-Seiler, P. Craig, J. A. Arias, A. B. Saucedo, M. M. Díaz, and F. L. Rosano, "**Defining a child's conceptualization of a virtual learning companion**," in *INTED2014 Proceedings*, 2014, pp. 2992-2996.

2013

Craig, P., Cannon, A., Kukla, R., Kennedy, J. (2013). **MatSE: the gene expression time-series explorer**. *BMC Bioinformatics*, 14(Suppl 19)(S1). (Impact factor 3.02)

Craig, Paul, Roa-Seiler, Néna, Cervantes, Ana Delia Olvera, Velasco, Marco Polo Tello, & García, Martín Reyes. (2013). **Information visualization for the collaborative analysis of complex data**. Paper presented at the 1er. Congreso de Investigación y vinculación para el desarrollo, Universidad de la Sierra Sur.

Craig, Paul, Roa-Seiler, Néna, Martínez Díaz, Marcela, & Lara Rosano, Felipe. (2013). **Assessing the potential of collaborative video games to improve education in la mixteca region of mexico**. Paper presented at the Third International Conference on Cognitonics, Slovenia.

Craig, Paul, Roa-Seiler, Néna, Rosano, Felipe Lara, & Díaz, Marcela Martínez. (2013). **The role of embodied conversational agents in collaborative face to face computer supported learning games**. Paper presented at the 26th International Conference on System Research, Informatics & Cybernetics, Baden Baden, Germany. **Winner of the Outstanding Scholarly Contribution Award**

Craig, Paul, Roa-Seiler, Néna, Cervantes, Ana Delia Olvera, Velasco, Marco Polo Tello, & García, Martín Reyes. (2013). **Information visualization for the collaborative analysis of complex data**. Paper presented at the 1st Conference on Research and Partnership for Development Oaxaca, Mexico.

Guzmán, Marvelia Gizé Jiménez, Morales, Lluvia, Craig, Paul, & Rocha, Mario Alberto Moreno. (2013). **Developing mixed initiative educational web interfaces for english education: A contextual approach**. Paper presented at the 6th Latin American Conference on Human Computer Interaction, Costa-Rica.

Guzmán, Marvelia Gizé Jiménez, Morales, Lluvia, Craig, Paul, & Rocha, Mario A. (2013). **Applying a user centered methodology to the development of mixed initiative web interfaces for english education**. Paper presented at the Congreso Internacional de Tecnologías de Información, Colima, Mexico.

P. Craig and N. Roa-Seiler, “**A combined multidimensional scaling and hierarchical clustering view for the exploratory analysis of multidimensional data**,” VDA, San Francisco, pp. 86540T-86540T, 2013.

2012

Craig, P., Cannon, A., Kukla, R., Kennedy, J. (2012, October). **MaTSE: The Microarray Time-Series Explorer**. Paper presented at *2nd IEEE Symposium on Biological Data Visualization*, Seattle, WA.

Craig, P. and N. Roa-Seiler (2012). **A Vertical Timeline Visualization for the Exploratory Analysis of Dialogue Data. Information Visualisation**. Information Visualisation Montpellier, France: 68 – 73. ISSN : 1550-6037 Print ISBN: 978-1-4673-2260-7

Martínez García, D., Craig, P., Roa-Seiler, N. and Benítez Saucedo, A., “**Validación de una estrategia de interacción de un agente corpóreo conversacional a través de la técnica del mago de Oz**,” presented at the MexIHC, Mexico City, Mexico, 2012. ACM ISBN: 978-1-4503-1659-0

Victor Manuel García Luna, Mario Alberto Moreno Rocha, Néna Roa Seiler, and Paul Craig., “**Hacia la definición de una estrategia para la integración de diferencias transculturales en el diseño de una Interfaz Gráfica de Usuario (GUI) implementando Indicadores de Sociedad de Información (ISI)**.” presented at the MexIHC, Mexico City, Mexico, 2012. ACM ISBN: 978-1-4503-1659-0

Craig, P., Roa-Seiler, N., Lepître, G., “**A Situated Cognition Aware Approach to the Design of Information Retrieval Systems for Geospatial Data**” in European Conference on Cognitive Ergonomics, Edinburgh, UK, 2012.

2010

Craig, P., Kennedy, J., Kukla, R., Cannon, A. (2010). **Pattern Browsing and Query Adjustment for the Exploratory Analysis and Cooperative Visualisation of Microarray Time-course Data**. In: Luo, Y. (Ed.) *Proceedings of the 7th International Conference on Cooperative Design, Visualisation and Engineering, 6240/2010*. (pp. 199-206). Mallorca, Spain: Lecture Notes in Computer Science.

2009

Craig, P., Kennedy, J. (2009). Refactoring **Data Transforms in MaTSE for Flexibility**. Paper presented at *REVISE: Refactoring Visualization from Experience, VizWeek Workshop*, Atlantic City, NJ.

2008

Graham, M., Craig, P., Kennedy, J. (2008). **Visualisation to Aid Biodiversity Studies through Accurate Taxonomic Reconciliation**. In: Gray, A., Jeffery, K., Shao, J. (Eds.) *Proceedings of British National Conference on Database Systems: Sharing Data, Information and Knowledge, 5071/2008 (LNCS 5071 ed.)*. (pp. 280-291). Cardiff, UK: Springer-Verlag.

Craig, P., Kennedy, J. (2008). **Concept Relationship Editor: A visual interface to support the assertion of synonymy relationships between taxonomic classifications**. In: Börner, K., Gröhn, M., Park, J., Roberts, J.

(Eds.) *Visualization and Data Analysis 2008, Proceedings of the SPIE, 6809*. (pp. 680906-680912). San Jose, CA: Society of Photo-Optical Instrumentation Engineers, Bellingham, WA, ETATS-UNIS .

Graham, M., Craig, P., Kennedy, J. (2008). **Visualisation to Aid Biodiversity Studies through Accurate Taxonomic Reconciliation**. In: Gray, A., Jeffery, K., Shao, J. (Eds.) *Proceedings of British National Conference on Database Systems: Sharing Data, Information and Knowledge, 5071/2008 (LNCS 5071 ed.)*. (pp. 280-291). Cardiff, UK: Springer-Verlag.

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2006

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2005

Craig, P., Kennedy, J., Cumming, A. (2005). **Animated Interval Scatter-plot Views for the Exploratory Analysis of Large Scale Microarray Time-course Data**. *Information Visualization*, 4(3), 149-163.

Craig, P., Kennedy, J., Cumming, A. (2005). **Coordinated Parallel Views for the Exploratory Analysis of Microarray Time-course Data**. In: *Proceedings of 3rd International Conference on Coordinated & Multiple Views in Exploratory Visualization*. (pp. 3-14). London: IEEE Computer Society Press.

Craig, P., Kennedy, J., Cumming, A. (2005). **Time-series Explorer: An Animated Information Visualisation for Microarray Time-course Data**. *BMC Bioinformatics 2005*, 6(3), P8.

2003

Craig, P., Kennedy, J. (2003). **Coordinated Graph and Scatter-Plot Views for the Visual Exploration of Microarray Time-Series Data**. In: *IEEE Symposium on Information Visualization*. (pp. 173-180). Seattle WA: IEEE Computer Society Press.

2002

Craig, P., Kennedy, J., Cumming, A. (2002). **Towards Visualising Temporal Features in Large Scale Microarray Time-series Data**. In: *6th International Conference on Information Visualisation – IV2002*. (pp. 427-433). IEEE Computer Society Press.