Dr David Croft

Curriculum Vitae

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Early career researcher currently employed as Lecturer in Computer Science with research focusses in Computational Intelligence based Data Mining and Assistive Technology.

Key skills and experience

- Highly motivated individual with excellent interpersonal skills and experience of working in teams and individually in both commercial and academic settings.
- Capable of quickly adapting to changing environments and learning new skills.
- Recently completed PhD focusing on computational intelligence.
- 5 years teaching experience.
- 11 years experience in C and C++, 10 years experience in Python.
- Experience with multi-threaded programming on Windows, Linux and Aix.
- Multiple years experience in SQL, OpenCV, Shell Scripting and LaTeX.

Education

2010–2014 **PhD in Computer Science**, *De Montfort University*, Leicester.
Thesis titled "Semi-automated co-reference identification in digital humanities collections"
- Researching the possible use of computational intelligence methods for identifying co-referent records sourced from online museum collections.
- Utilising Fuzzy logic, Clustering, Rule based systems and Semantic similarity metrics.

2009–2010 **MSc in Intelligent Systems and Robotics**, *De Montfort University*, Leicester, Distinction.
Dissertation "Vision based path and junction detection for mobile agents".
- Investigating the use of computer vision in assistive technology, specifically wheelchair control.
- Covering Artificial Intelligence Programming, Fuzzy Logic, Artificial Neural Networks, Evolutionary Computing and Intelligent Mobile Robots.

2003–2006 **BSc in Computer Science: Robotics and Intelligent Machines**, *The University of Essex*, Colchester, 2:2.
- Dissertation "Semi-autonomous wheelchair navigation for persons of limited physical mobility".
- Covering Computer vision, Image processing, Genetic programming, Machine Learning, Object oriented programming and Mobile Robotics.

Employment

2015–Present **Lecturer in Computer Science**, *Coventry University*, Coventry.

- Module leader for the new "Introduction to Algorithms" module. Designed new module structure featuring automated formative feedback allowing for self driven learning.
- Taught modules included "Introduction to Programming", "Introduction to Algorithms", "Programming, Algorithms and Data Structures", "Theoretical Aspects of Computing" and "Activity Lead Learning".
- Additional activities included Undergraduate personal tutor, programming support sessions, computer club and organisation of entry into the IEEEXtreme programming competition.
- Supervision of Undergraduate, Masters and PhD level students.

2014–2015 **Research Fellow**, *De Montfort University*, Leicester.

Working on the HEIF funded FuzzyFinder project.

- Investigating new applications and domains for the technologies developed and successfully deployed during the FuzzyPhoto project.
- Contributed to AHRC funding bid (≈£500k) for the SERAPH project. Aims to produce a "serendipity engine" for humanities researchers.

2013–2014 **Research Fellow**, *De Montfort University*, Leicester.

Working on the AHRC funded FuzzyPhoto project. The FuzzyPhoto system identifies potential record matches in imprecise, uncertain, incorrect and messy photographic collection metadata from the gallery, library, archive and museum sector.

- Designed, developed and successfully deployed fuzzy logic based data mining system.
- Individually created custom multi-threaded data mining application in C++.
- Developed custom data ingestion tools for multiple partner institutions utilising different file formats, metadata schemas and data syntaxes in Python.
- Individually configured and deployed FuzzyPhoto live system on VM Linux platform.
- Personally discussed metadata schema, file exchange and website widget integration with multiple partner institutions.

2011–2015 **Part-time lecturer**, *De Montfort University*, Leicester.

- Teaching on undergraduate and masters level courses.
- Courses include, "C++ Programming", "C++ Programming for Games Programmers", "Data Structures and Algorithms", "Artificial Intelligence and Modelling for Games" and "Mathematical Modelling and Artificial Intelligence".
- Masters level dissertation marking.
- Final year personal tutor. Responsibilities included student support and advise regarding health, financial and course issues.

2006–2009 **Software Developer**, *Experian Integrated Marketing*, Luton.

Worked individually and as part of a team on existing production systems and developing new systems for several clients.

- Personally developed multi-threaded UK address cleansing client/server system in C++.
- Individually developed multi-threaded profanity filter in C++.
- Personally converted existing flat block identification software from a korn shell script to C.
- Assisted in development of multi-threaded email address validation software in Python.
- Assisted in development of address cleansing system for Hong Kong using Python.

Publications

- S. Coupland, D. Croft, and S. Brown, *"A fast geometric defuzzication operator for large scale information retrieval,"* in Fuzzy Systems (FUZZ-IEEE), 2014 IEEE International Conference on, July 2014, pp. 1143-1149.

- D. Croft, S. Coupland, J. Shell, and S. Brown, *"A fast and efficient semantic short text similarity metric,"* in Computational Intelligence (UKCI), 2013 13th UK Workshop on, Sept 2013, pp. 221-227.
- S. Brown, S. Coupland, and D. Croft, *"Where are the pictures? linking photographic records across collections using fuzzy logic,"* in Museums and the Web Asia 2013, N. Proctor and R. Cherry, Eds. Silver Spring, MD: Museums and the Web, Sept 2013, pp. 221-227.
- D. Croft, S. Coupland, and S. Brown, *"A hybrid approach to co-reference identification within museum collections,"* in Computational Intelligence for Engineering Solutions (CIES), 2013 IEEE Symposium on, April 2013, pp. 110-117.
- S. Brown, S. Coupland, and D. Croft, *"Improving record matching across disparate historical resources,"* in Digital Humanities Congress 2012, Proceedings of the, ser. Studies in the Digital Humanities, Museums and the Web. Sheffield: HRI Online Publications, 2014.
- D. Croft, *"Improving record matching in imprecise and uncertain datasets,"* Literary & Linguistic Computing, vol. 27, no. 4, pp. 347-354, 2012.
- D. Croft and S. Coupland, *"The application of colour fire to robot vision,"* in Computational Intelligence (UKCI), 2010 UK Workshop on, Sept 2010, pp. 1-6.
- **To appear**, S. Brown, D. Croft, and S. Coupland, *"Methods for mining messy real world data: Co-reference identification using fuzzy logic,"* in Digital Humanities Congress 2014, Proceedings of the, Sheffield.
- **To appear**, D. Croft, S. Brown and S. Coupland, *"An effective Named Entity similarity metric for comparing data from multiple sources with varying syntax"* in Digital Scholarship in the Humanities.

Other

- Part of the winning three man autonomous robotics team for the RobotChallenge 2013 "puck collect" team. Part of the same team's 2nd place entry in 2014.
- Helped organised and run the De Montfort University Robotics Club.
- Winner of the 2013 British Computing Society (BCS) Leicester branch's current postgraduate research presentation competition.
- One half of the two man team that was placed 1st within De Montfort university and 8th nationally in the 2013 IEEE Extreme Programming competition.
- Winner of De Montfort University's 2009 Bentley Scholarship.
- Born and raised in Hong Kong. Provided me with a good understanding of and respect for other cultures.
- Car owner with clean driving licence