Neill D. F. Campbell

Research Associate in Computer Vision and Graphics

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Research Interests

multi-view stereo and segmentation, discrete optimisation, active learning, shape synthesis, and the general application of machine learning techniques to graphics and vision problems

Education

2011 – 2014 **Research Associate**, *University College London (Dept. of Computer Science)*.
Topic: EPSRC project 'Synthesising and Editing Photorealistic Visual Objects'
Supervisor: Prof. Jan Kautz

2010 – 2011 **Research Associate**, *University of Cambridge (Dept. of Engineering)*.
Topic: EU Hydrosys project 'Terrain Height-Map Recovery from UAV Data'
Supervisor: Dr. Edward Rosten

2006 – 2010 **PhD (Engineering)**, *University of Cambridge (Dept. of Engineering)*.
PhD Thesis: 'Automatic 3D Model Acquisition from Uncalibrated Images'
Advisors: Prof. Roberto Cipolla, Dr. George Vogiatzis, and Dr. Carlos Hernández
Examiners: Prof. Philip Torr and Prof. Nick Kingsbury

2002 – 2006 **MEng (Engineering)**, *University of Cambridge (Dept. of Engineering)*.
MEng Thesis: 'Design of a Low Complexity DRM Software Defined Radio Receiver'
Part IIB: Honours with Distinction, 2nd in Class List, 1st in EIST Specialism
Part IIA: Starred Class I (with Distinction), 1st in Class List
Part IB: Class I, 6th in Class List
Part IA: Class I, 1st in Class List

2001 – 2002 **Royal Academy of Engineering 'Year in Industy' Placement**, *PG Drives Technology*.

1995 – 2001 **Poole Grammar School**, *Dorset*.
STEP: Maths I One, Maths II S
S-Level: Physics One
A-level: Maths A, Further Maths A, Physics A, Chemistry A, General Studies A
GCSE: 9 A*s, 2 As

Selected Awards and Scholarships

2013 **Attended Heidelberg Laureate Forum**.
Selected as one of 200 young researchers world-wide (in Mathematics and Computer Science) to meet with Fields Medal, Turing Award, Nevanlinna Prize, and Abel Prize holders.

2011 **BBC Best Paper Prize**.
8th European Conference on Visual Media Production.

2006 – 2009 **Industrial Sponsorship**.
Toshiba Research Europe.

2006 – 2009 **C. Rooke Scholarship**, *Gonville & Caius College*.
Graduate scholarship awarded for academic performance.

2006 – 2009 **Schiff PhD Scholarship**, *University of Cambridge*.
University graduate studentship for PhD research in Engineering, Physics or the Applied Sciences.

2006 **AT&T Laboratories Prize**, *Dept. of Engineering*.
Awarded for 1st place in Electrical and Information Sciences Tripos in the Masters year.

2005 **Baker Prize**, *Dept. of Engineering*.
Awarded for 1st place in finals class list across all engineering disciplines.

2005 **Schuldham Plate**, *Gonville & Caius College*.
Top academic award in college across all subjects.

2005 **Sir William Siemens Technology Medal**.
Industrial award for 3rd year project.

2005 **Computer Project Prize**, *Dept. of Engineering*.
Awarded for 3rd year computer-based project.

2004 – 2006 **Senior Scholarship**, *Gonville & Caius College*.
Awarded for examination performance.

2004 – 2006 **Undergraduate Sponsorship**.
Competitive sponsorship programme from Alena Marconi Systems (now part of British Aerospace) including two summer placements.

2003 – 2004 **Computing Prizes**, *Dept. of Engineering*.
Two awards for 1st & 2nd year computing projects.

2003 **Academic Scholarship**, *Gonville & Caius College*.
Awarded for examination performance.

2001 **UK Senior Mathematical Challenge Gold Certificate**.

2001 **Royal Society of Chemistry Olympiad Gold Certificate**.

Work and Teaching Experience

2011 – 2014 **Supervision and Teaching at University College London**.
Supervision of 3 PhD Students in Computer Vision/Graphics and an MSc student. Lectures provided in Computer Graphics and Computational Photography and additional teaching duties including the creation and demonstration of practicals and marking coursework and exams. Advanced tutorials also given for research students as well as reading groups in both the Vision and Graphics fields.

2008 **Toshiba Research Europe**.
Research internship developing software to automatically generate 3D computer models from multiple photographs (a multi-view stereo system).

2006 – 2008 **Supervisor for Gonville & Caius College**.
Small group teaching (2-3 students) of undergraduates in Mathematics, Mechanics, Electro-Magnetics, Linear Circuits, and Information Theory.

2005 – 2006 **Alena Marconi Systems (now part of British Aerospace)**.
Two 6 week summer placements working on the design and modelling of new radar systems.

2003 **PG Drives Technology**.
Summer placement working on control theory (electric wheelchair system response) in the Research and Development Department.

2001 – 2002 **PG Drives Technology**.
Royal Academy of Engineering 'Year in Industry' placement as a Student Engineer working on the design of electronics and software for electric wheelchair controllers in the Engineering Department.

1999 **Custom Micro Products**.
Internship as a Student Engineer designing electronic security systems in the Research and Development Department.

1998 **Marconi Communication**.
Internship as a Software Engineer modelling new 'Voice-Over-IP' technologies.

Presentations and Invited Talks

2007 – 2014 **Oral presentations of peer-reviewed papers**.
BMVC (2007), ECCV (2008), CVMP (2011), CVPR (2014), SIGGRAPH (2014)

2007 – 2014 **Invited talks**.
Pattern Recognition and Computer Vision Colloquium (Prague), Gatsby Unit (London), Google Research (Seattle), Max Planck Institute (Tübingen)

Publications

Journal Articles

[1] N. D. F. Campbell and J. Kautz, "Learning a Manifold of Fonts," *ACM Transactions on Graphics (SIGGRAPH)*, vol. 33, no. 4, 2014.

[2] N. D. F. Campbell, G. Vogiatzis, C. Hernández, and R. Cipolla, "Automatic 3D Object Segmentation in Multiple Views using Volumetric Graph-Cuts," *Image and Vision Computing*, vol. 28, no. 1, 2010.

Refereed Conference Proceedings

[3] O. Mac Aodha, N. D. F. Campbell, J. Kautz, and G. J. Brostow, "Hierarchical Subquery Evaluation for Active Learning on a Graph," in proc. *Int. Conf. on Computer Vision and Pattern Recognition*, 2014.

[4] N. D. F. Campbell, K. Subr, and J. Kautz, "Fully-Connected CRFs with Non-Parametric Pairwise Potentials," in proc. *Int. Conf. on Computer Vision and Pattern Recognition*, 2013.

[5] O. Mac Aodha, N. D. F. Campbell, A. Nair, and G. J. Brostow, "Patch Based Synthesis for Single Depth Image Super-Resolution," in proc. *12th European Conf. on Computer Vision*, 2012.

[6] N. D. F. Campbell, G. Vogiatzis, C. Hernández, and R. Cipolla, "Automatic Object Segmentation from Calibrated Images," in proc. *8th European Conf. on Visual Media Production*, 2011.

[7] N. D. F. Campbell, G. Vogiatzis, C. Hernández, and R. Cipolla, "Using Multiple Hypotheses to Improve Depth-Maps for Multi-View Stereo," in proc. *10th European Conf. on Computer Vision*, 2008.

[8] N. D. F. Campbell, G. Vogiatzis, C. Hernández, and R. Cipolla, "Automatic 3D Object Segmentation in Multiple Views using Volumetric Graph-Cuts," in proc. *18th British Machine Vision Conf.*, 2007.

Professional Activities and Development

Membership IEEE, ACM.

Reviewer PAMI, CVPR, ICCV, ECCV, BMVC.

PC CVMP, 3DV.

2007 – 2014 **Development Courses**.
Taken professional development courses in presentation skills, paper writing, student supervision, grant writing, and small group teaching.

2006 **Marketing and Accountancy**.
Institution accredited courses in Marketing and Accountancy undertaken as part of MEng degree.

2002 **Certificate in Management**.
Residential management course, leading to a 'Certificate in Management' (NVQ level 3), attended as part of the Royal Academy of Engineering 'Year in Industry' scheme.

References

Available upon request.