Daniel Ernest Worrall

Born: 3rd September 1992
Nationality: British Citizen

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Education

2014 - Present	**PhD in Computer Vision** at **University College London** Working title: "Continuous Transformation Equivariances in Deep Learning" Supervisors: Dr. Gabriel Brostow, Dr. Clare Wilson
2013 - 2014	**Information & Computer Engineering, MEng** at **The University of Cambridge** "The Neural Sampling Hypothesis In Dynamic Environments" Supervisor: Dr. Richard Turner, Distinction: 77.9%
2010 - 2013	**Electrical & Information Sciences, BA** at **The University of Cambridge** All Firsts, 2011: 82.4%, 2012: 81.7%, 2013: 75.4%
2003 - 2010	**The Perse School, Cambridge** A-Levels: 4 $\times$ A* AS-levels: 5 $\times$ A GCSEs: 9 $\times$ A*, 1 $\times$ A

Industrial Experience and Projects

June 2017 - Present	**Machine Learning Consultant** - Zarathustra Technologies
April 2017 - Present	**Machine Learning Consultant** - Amnesty International Decoders project Built aerial imaging system for to detect burning villages in Darfur
Summer 2012	**Research internship** - Centre for Advanced Photonics and Electronics, Cambridge Fabricated a sub-micron scale ultrasound transducer
Summer 2011	**Engineering internship** - 6 weeks - ARM Ltd., Cambridge Microprocessor C++ class development and blogged for ARM mbed
Summer 2009	**Engineering internship** - 4 weeks - ARM Ltd., Cambridge Allocated via the prestigious Nuffield Foundation science bursary

Conference Publications

1. **D.E. Worrall, S.J. Garbin, D. Turmukhambetov, G.J. Brostow** (2017), *Interpretable Transformations With Encoder-Decoder Networks*, in Proceedings of International Conference on Computer Vision, (ICCV), Oct 22-29, 2017, Venice (Italy)

2. **R. Tanno, D.E. Worrall, A. Ghosh, E. Kaden, S.N. Sotiropoulos, A. Criminisi, D. Alexander** (2017), *Bayesian Image Quality Transfer With CNNs: Exploring Uncertainty In dMRI Super-Resolution*, in Proceedings of 20th International Conference on Medical Image Computing and Computer Assisted Intervention, (MICCAI), Sept 10-14, 2017, Quebec City (Canada). Oral presentation and winner of Young Scientist Award

3. **D.E. Worrall, S.J. Garbin, D. Turmukhambetov, G.J. Brostow** (2017), *Harmonic Networks: Deep Translation And Rotation Equivariance*, in Proceedings of 30th IEEE Conference on Computer Vision and Pattern Recognition (CVPR), July 21-26, 2017, Honolulu (USA)

4. **D.E. Worrall, C.M. Wilson, G.J. Brostow** (2016), *Automated Retinopathy of Prematurity Case Detection With Convolutional Neural Networks*, Deep Learning And Data Labeling For Medical Applications 68-76

Conference Posters/Talks

1. **D.E. Worrall, G.J Brostow, A. Ells, C.M. Wilson**, *Visualising The Temporal Progression Of Retinal Growth In Neonates*, World ROP Congress 2017, Aug 31 - Sept 2 Cancun (Mexico)

2. **D.E. Worrall, G.J Brostow, C.M. Wilson** (2016), *Automated Optic Disc Localization In The Neonatal Fundus Image*, The Annual Meeting of the Association for Research in Vision and Ophthalmology (ARVO), May 1-5, 2016, Seattle (USA).

Programming and IT competency

Everyday	Python (inc. Tensorflow, Theano, OpenCV,..), MATLAB, Bash, Linux
Occasional	C/C++, HTML, CSS, Lua (Torch)

Mathematical skills/experience

Deep Learning, Machine Learning, Computer Vision, Signal Processing, Linear Systems and Control, Linear Algebra, Information Theory, Numerical Optimisation, Data transmission, Computational Neuroscience, Lie Group Theory, Representation Theory, Harmonic Analysis, Gaussian Scale-space Theory

Reviewing

JAIR (2017), MICCAI DLMIA (2017), BMVC (2017), ICCV (2017,2015), Nature Scientific Reports (2016), Image and Vision Computing (2016), CVPR (2015)

Awards

2017 British Machine Vision Association Travel Bursary
2014 **Frank George Award** for outstanding academic performance: **1st in college**
2014 **Thomas Ireland Scholarship** for academic success
2013 **Donald Green Scholarship** for outstanding academic performance: **1st in college**
2013 **Thomas Ireland Scholarship** for academic success
2012 **Thomas Ireland Scholarship** for academic success
2011 **Eliahou Dangoor Scholarship** for students in a science discipline
2010 **British Linguistics Olympiad Gold Award** - **15th in UK**
2009 **UKMT Team Maths Challenge** - national finals
2009 **British Science Association Gold Crest Award**
2009 **Nuffield Foundation Science Bursary**

Organisational roles

2016 - 2017 UCL computer vision reading group (weekly)
2013 - 2014 Sidney Sussex Eikon photography society, Co-founder, (regular exhibitions)
2012 - 2013 Sidney Sussex College Boat Club, Boat Club Captain
2011 - 2012 Sidney Sussex College Boat Club, Men's Vice-Captain
2011 - 2012 Sidney Sussex College, Cambridge, engineering society (8 lectures from guest speakers)

Teaching

2015 - 2017 **Graduate teaching assistant at UCL**
Machine vision: MATLAB practicals and theory, designed/marked coursework, marked exams
2014 - 2015 **Undergraduate teaching assistant at UCL**
Robotics programming in C: 1st year computer science students

Languages

English: Mother tongue **German**: Intermediate (6 years) **Indonesian**: Basic Conversational

Interests

Running, cycling, photography, travel, foreign languages

Referees

PhD supervisor: Dr. Gabriel J. Brostow
Computer Science Department, University College London, Gower Street, London, WC1E 6B, UK
+44 20 31 08 71 20, brostow@cs.ucl.ac.uk, http://www0.cs.ucl.ac.uk/staff/G.Brostow/

Undergraduate Tutor: Prof. Andrew J. Flewitt
Electrical Engineering Division, Cambridge University, J J Thomson Avenue, Cambridge CB3 0FA, UK
+44 12 23 74 83 32, ajf@eng.cam.ac.uk, http://www.eng.cam.ac.uk/profiles/ajf23