

# Dr. Weidi Xie

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## RESEARCH INTEREST

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My research interest focuses on developing a computer vision system that moves a step closer to human-level visual understanding. Specifically, I'm interested in self-supervised learning algorithms that enable machines to answer human-understandable questions on specific visual content, e.g. on movies.

## EDUCATION

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**University of Oxford**, Doctor of Philosophy (DPhil) 2014 – 2018

Thesis: Deep Neural Networks in Computer Vision and Biomedical Image Analysis

Advisors: Professor Alison Noble OBE FREng FRS & Professor Andrew Zisserman FRS

Thesis Defence Committees: Professor Andrea Vedaldi & Professor Daniel Rueckert FREng FMedSci

**University College London**, Master of Science (MSc) 2012 – 2013

Thesis: Document Authorship Recognition with Machine Learning (Distinction)

Advisor: Professor Lewis D. Griffin

**Queen Mary, University of London**, Bachelor of Science (BSc) 2011 – 2012

**Beijing University of Posts and Telecommunications**, Bachelor of Science (BSc) 2008 – 2011

## WORK EXPERIENCE

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**University of Oxford**, Research Fellow in Visual Geometry Group 2017 – Now

**University College London**, Research Assistant in MRC, LMCB 2013 – 2014

## AWARDS

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**Biannual Best Journal Article** *Computer Methods in Biomechanics and Biomedical Engineering* 2019

**Research Excellence Award** *Department of Engineering Science, University of Oxford, 2018*

**Best Conference Paper Award** *MICCAI workshop on Fetal and Infant Image Analysis, 2017*

**Best Conference Poster Award** *Functional Imaging and Modelling of the Heart Conference, 2017*

**Oxford-Google DeepMind Graduate Scholarships (£80k GBP)** *Google DeepMind. 2015 – 2017*

**Travel Award (£300 GBP)** *Wolfson College, Oxford. 2015*

**Magdalen Award (£5k GBP)** *China Oxford Scholarship Fund. 2014 – 2015*

## INVITED TALKS

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**Utterance-level Aggregation For Speaker Recognition In The Wild.** International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Brighton, UK, 2019

**VGGFace2: A Dataset for Recognizing Faces Across Pose and Age.** IEEE International Conference on Automatic Face and Gesture Recognition (F&G), Xi'an, China, 2018

**Microscopy Cell Counting with Fully Convolutional Networks.** Deep Learning Workshop in MICCAI, Munich, Germany, 2015

**Microscopy Cell Counting with Fully Convolutional Networks.** Invited talk in Heidelberg Collaboratory for Image Processing Group (HCI), Heidelberg, Germany, 2015

## PROFESSIONAL ACTIVITIES

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**Co-organizer** *VoxCeleb Speaker Recognition Challenge (VoxSRC), Interspeech, 2019*  
**Co-organizer** *Mandarin Audio-Visual Speech Recognition Challenge (MAVSR)*  
*ACM International Conference on Multimodal Interaction, 2019*

**Conference Reviewer:** IEEE Conference on Computer Vision and Pattern Recognition (CVPR), European Conference on Computer Vision (ECCV), International Conference on Computer Vision (ICCV), British Machine Vision Conference (BMVC), International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)

**Journal Reviewer:** IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), International Journal on Computer Vision (IJCV), BMC Bioinformatics, IEEE Transactions on Medical Imaging (TMI), IEEE Journal of Biomedical and Health Informatics (JBHI).

## PUBLICATIONS

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### 2019

- [1] **W. Xie**, A. Nagrani, J. S. Chung, and A. Zisserman, "Utterance-level Aggregation For Speaker Recognition In The Wild". In: *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2019. **(5%, Oral Presentation)**
- [2] T. Han, **W. Xie**, and A. Zisserman, "Video Representation Learning by Dense Predictive Coding". In: *International Workshop on Large Scale Holistic Video Understanding, International Conference on Computer Vision (ICCV)*, 2019.
- [3] Z. Lai, and **W. Xie**, "Self-supervised Learning for Video Correspondence Flow". In: *British Machine Vision Conference (BMVC)*, 2019. **(5%, Oral Presentation)**
- [4] H. Chen, **W. Xie**, A. Vedaldi, and A. Zisserman, "AutoCorrect: Deep Inductive Alignment of Noisy Geometric Annotations". In: *British Machine Vision Conference (BMVC)*, 2019. **(9%, Spotlight)**
- [5] D. Xu, **W. Xie**, and A. Zisserman, "Geometry-Aware Corner Network for Video Object Detection from Static Cameras". In: *British Machine Vision Conference (BMVC)*, 2019. **(5%, Oral Presentation)**

### 2018

- [6] **W. Xie**, L. Shen, and A. Zisserman, "Comparator Networks". In: *European Conference on Computer Vision (ECCV)*, 2018.
- [7] **W. Xie**, and A. Zisserman, "Multicolumn Networks on Face Recognition". In: *British Machine Vision Conference (BMVC)*, 2018.
- [8] **W. Xie\***, D. M. Vigneault\*, C. Y. Ho, D. A. Bluemke, and J. A. Noble, " $\Omega$ -Net: Fully Automatic, Multi-View Cardiac MR Detection, Orientation, and Segmentation with Deep Neural Networks". In: *Medical Image Analysis*, Volume 48, August 2018, Pages 95-106. Impact Factor: 8.8. (Joint First Author)
- [9] **W. Xie\***, A.I.L. Namburete\*, M. Yaqub, A. Zisserman, and J. A. Noble, "Fully-Automated Alignment of 3D Fetal Brain Ultrasound to A Canonical Reference Space Using Multi-task Learning". In: *Medical Image Analysis*, Volume 46, May 2018, Pages 1-14. Impact Factor: 8.8. (Joint First Author)
- [10] E. Lu, **W. Xie**, and A. Zisserman, "Class-agnostic Counting". In: *Asian Conference on Computer Vision (ACCV)*, 2018.
- [11] Q. Cao, L. Shen, **W. Xie**, O. M. Parkhi, and A. Zisserman, "VGGFace2: A Dataset for Recognising Faces Across Pose and Age". In: *IEEE International Conference on Automatic Face and Gesture Recognition (FG)*, 2018. **(5%, Oral Presentation)**

- [12] R. Huang, **W. Xie**, and J. A. Noble, “VP-Nets : Efficient Automatic Localization of Key Brain Structures in 3D Fetal Neurosonography”. In: *Medical Image Analysis*, Volume 47, July 2018, Pages 127–139. Impact Factor: 8.8 **2017**
- [13] A. I.L. Namburete, **W. Xie**, and J. A. Noble, “Robust Regression of Brain Maturation from 3D Fetal Neurosonography using CRNs”. In: *MICCAI Workshop on Fetal and Infant Image analysis (FIFI), 2017. (Best Paper Award)*.
- [14] D. M. Vigneaulta, **W. Xie**, D. A. Bluemke, and J. A. Noble, “Feature Tracking Cardiac Magnetic Resonance via Deep Learning and Spline Optimization”. In: *Functional Imaging and Modelling of the Heart (FIMH), 2017. (Best Poster Award)*.
- [15] Y. Hu, E. Gibson, L. Lee, **W. Xie**, D. C. Barratt, T. Vercauteren, and J. A. Noble, “Freehand Ultrasound Image Simulation with Spatially-conditioned Generative Adversarial Networks”. In: *MICCAI Workshop on Reconstruction and Analysis of Moving Body Organs (RAMBO), 2017*.

## **2015 – 2016**

- [16] **W. Xie**, J. A. Noble, and A. Zisserman, “Layer Recurrent Neural Networks”. Technical Report, 2016.
- [17] **W. Xie**, J. A. Noble, and A. Zisserman, “Microscopy Cell Counting And Detection with Fully Convolutional Regression Networks”. In: *Computer Methods in Biomechanics and Biomedical Engineering : Imaging & Visualization*, May 2016, Pages 283-292. **(Biannual Best Journal Article)**
- [18] **W. Xie**, J. A. Noble, and A. Zisserman, “Microscopy Cell Counting with Fully Convolutional Regression Networks”. In: *MICCAI 1st Deep Learning Workshop (DLMIA)*, 2015. **(Oral Presentation)**

## **PAPERS IN SUBMISSION**

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- [19] A. Nagrani, J. S. Chung, **W. Xie**, and A. Zisserman, “VoxCeleb: Large-scale Speaker Identification in the Wild”. Submitted to: *Computer Speech & Language*, 2019.