WEIDI XIE

• Department of Engineering Science, University of Oxford • weidi.xie@eng.ox.ac.uk • +44 (0) 7598730577

EDUCATION

University of Oxford, UK 2014 – 2017

- Doctor of Philosophy (DPhil) in Engineering Science
  - Thesis: Deep Neural Networks in Computer Vision and Biomedical Image Analysis
  - Supervisors: Professor Alison Noble OBE FREng FRS & Professor Andrew Zisserman FRS
  - Examined by: Professor Andrea Vedaldi (internal) & Professor Daniel Rueckert (external)

University College London, UK 2012 – 2013

- Master of Science (MSc) in Computer Graphics, Vision and Imaging
  - Thesis: Document Authorship Recognition with Machine Learning
  - Passed thesis **with distinction**

Queen Mary, University of London, UK (Exchange student with partial scholarships) 2011 – 2012

- Bachelor of Science (BSc) in Telecommunication Engineering with Management
  - Graduated with **First-class Honours**

Beijing University of Posts and Telecommunications, China 2008 – 2011

- Bachelor of Science (BSc) in Telecommunication Engineering
  - Graduated with **First-class Honours**

WORK EXPERIENCE

Department of Engineering Science, University of Oxford. Nov 2017 – Present

- Postdoctoral Researcher in Visual Geometry Group, Seebibyte Project.
  - Develop new Deep Learning architectures for template-wise face recognition.
  - Transfer current computer vision technologies to industry and other academic disciplines, such as archaeology, art, geology, medicine, plant sciences and zoology.

MRC Laboratory for Molecular Cell Biology, University College London. Sep 2013 – Feb 2014

- Research Assistant.
  - Develop cell tracking systems for microscopy video streams.

AWARDS & SCHOLARSHIPS

- **Best Paper Award** MICCAI workshop on Fetal and InFant Image Analysis, FIFI 2017. 2017
- **Best Poster Award** Functional Imaging and Modelling of the Heart, FIMH 2017. 2017
- **Google Oxford-Deepmind Graduate Scholarships** Google DeepMind 2015 – 2017
  Oxford-DeepMind Full Graduate Scholarships in Machine Learning and Biomedical Image Analysis.
- **Magadalen Award** China Oxford Scholarship Fund (COSF). 2014 – 2015
  For students with excellent academic record.
- **Travel Award** Wolfson College, Oxford. 2015

RESEARCH INTERESTS

Human Speaker (Voice) Recognition Jun 2018 – Present

- Explore Deep Learning architectures for speaker recognition.
- Supervisor: Professor Andrew Zisserman

Category-agnostic Objects Counting Jan 2018 – Present

- I am co-developing mahine learning models that are capable of counting obejcts of any categories in an image. While deploying the pre-trained model to unseen domains, it also enables fast adaptation by human interaction.
  Supervisor: Professor Andrew Zisserman

Human Face Recognition Nov 2017 – Jun 2018

- I have been a principal contributor in collecting and releasing the *first* large-scale face recognition dataset (VGGFace2), with large pose and age variations, while having minimal label noise.
- I have developed the state-of-the-art Deep Learning architecture (Comparator Networks) for template-wise face verification. This novel architecture design can ingest multiple images as input, measure relative image visual qualities with internal competition, and encode multiple discriminative regions by soft-attention mechanism, all in one end-to-end trainable system.

- Supervisor: Professor Andrew Zisserman

Structure Segmentation in Cardiac Magnetic Resonance (CMR) Imaging Dec 2016 – Dec 2017

- I have co-developed the first Deep Learning architecture (Ω-Net) that offers the potential to mimic the diagnosis process of cardiac radiologists, where structure localization, re-orientation and segmentation on the cardiac MR videos are trained simultaneously in one model.
  Supervisor: Professor Alison Noble & Professor Andrew Zisserman

Key Structure Localization & Alignment in 3D Fetal Neurosonography Nov 2016 – Aug 2017

- I have co-developed the Deep Learning model for 3D brain structure localization and fully-automated alignment of 3D fetal brain ultrasound volume to a canonical reference space using multi-task Convolutional Neural Networks (CNNs).
  Supervisor: Professor Alison Noble & Professor Andrew Zisserman

Cell Detection & Counting in Microscopy Imaging Dec 2014 – Jun 2015

- I have proposed the *first* Fully Convolutional Regression Networks (FCRNs) for microscopy cell detection and counting, which has now become a standard approach in this field. According to Google Scholar, this work has been cited 67 times.
  Supervisor: Professor Alison Noble & Professor Andrew Zisserman

JOURNAL PUBLICATIONS

[1] Davis M. Vigneaulta*, **Weidi Xie***, Carolyn Y. Ho, David A. Bluemke, and J. Alison Noble, "Ω-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. (*** indicates to equal contribution, joint first author**, 5-Year Impact Factor: 5.417)

[2] Ruobing Huang, **Weidi Xie**, and J. Alison 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. (5-Year Impact Factor: 5.417)

[3] Ana I.L. Namburete*, **Weidi Xie***, Mohammad Yaqub, Andrew Zisserman, J. Alison 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. (*** indicates to equal contribution, , joint first author**, 5-Year Impact Factor: 5.417)

[4] **Weidi Xie**, J. Alison Noble, and Andrew Zisserman, "Microscopy Cell Counting And Detection with Fully Convolutional Regression Networks". In: *Computer Methods in Biomechanics and Biomedical Engineering : Imaging & Visualization*.

CONFERENCE PUBLICATIONS

[5] **Weidi Xie**, Li Shen, and Andrew Zisserman, "Comparator Networks". In: *European Conference on Computer Vision (ECCV)*, 2018.

[6] **Weidi Xie** and Andrew Zisserman, "Multicolumn Networks on Face Recognition". In: *British Machine Vision Conference (BMVC)*, 2018.

[7] Qiong Cao, Li Shen, **Weidi Xie**, Omkar M. Parkhi, and Andrew Zisserman, "VGGFace2: A Dataset for Recognising Faces Across Pose and Age". In: *IEEE International Conference on Automatic Face and Gesture Recognition (F&G), 2018*, Oral.

[8] Erika Lu, **Weidi Xie**, and Andrew Zisserman, "When Tracking Met Counting: An Adaptable, Self-Similarity Counting Network". Submitted to *Asian Conference on Computer Vision (ACCV)*, 2018. (UnderReview)

[9] Mohammad Ali Maraci, **Weidi Xie**, and J. Alison Noble, "Can Dilated Convolutions Capture Ultrasound Video Dynamics?". In: *9th International Conference on Machine Learning in Medical Imaging (MLMI), 2018*.

[10] Ana I.L. Namburete, **Weidi Xie**, and J. Alison 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.

[11] Davis M. Vigneaulta, **Weidi Xie**, David A. Bluemke, and J. Alison 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.

[12] Yipeng Hu, Eli Gibson, Li-Lin Lee, **Weidi Xie**, Dean C. Barratt, Tom Vercauteren, and J. Alison Noble, "Freehand Ultrasound Image Simulation with Spatially-conditioned Generative Adversarial Networks". In: *MICCAI Workshop on Reconstruction and Analysis of Moving Body Organs (RAMBO), 2017*.

[13] **Weidi Xie**, J. Alison Noble, and Andrew Zisserman, "Microscopy Cell Counting with Fully Convolutional Regression Networks". In: *MICCAI 1st Deep Learning Workshop (DLMIA)*, 2015.

[14] **Weidi Xie**, J. Alison Noble, and Andrew Zisserman, "Layer Recurrent Neural Networks". Technical Report, https://openreview.net/pdf?id=rJJRDvcex.

PRESENTATIONS

- IEEE International Conference on Automatic Face and Gesture Recognition (F&G), Xi'an, China, 2018
- Deep Learning Workshop in MICCAI, Munich, Germany, 2015
- Microscopy Cell Counting with Fully Convolutional Networks, in Heidelberg Collaboratory for Image Processing Group, Heidelberg, Germany, 2015

PROFESSIONAL & ACTIVITIES

- Reviewer for MICCAI, ECCV.
- Reviewer for IEEE Transactions on Medical Imaging.
- Reviewer for IEEE Journal of Biomedical and Health Informatics.

LANGUAGES

- Chinese (Native)
- English (Full Professional Proficiency)

[*CV compiled on 2018-08-09*]