

RESEARCH INTERESTS

Deep learning, computer vision, data-efficient sampling, self/ semi-supervised learning, representation/ transfer/ multimodal learning (*applications: segmentation, VAE/GAN, classification, super-resolution, 3D-reconstruction*)

PROFESSIONAL EXPERIENCE

- **University College London** London, UK
Research Fellow (machine learning, [CMIC](#) at [UCL's AI Centre](#)) Mar.2019 –
- **Heriot-Watt University** Edinburgh, UK
Research Associate (3D modelling of porous media) Nov.2017 – Nov.2018
- **Canadian Natural Resources International (UK)** Aberdeen, UK
Research Intern (numerical reservoir simulation) Aug.2013 – Dec.2014

EDUCATION

- **Heriot-Watt University** Edinburgh, UK
Ph.D. Petroleum Engineering - Image Processing and Modelling March. 2013 – Nov. 2017
Thesis: Multi-Scale/Modality Reconstruction of Porous Media
- **Heriot-Watt University** Edinburgh, UK
MSc Petroleum Engineering (GPA 2:1) Aug. 2011 – Aug. 2012
[Subject ranked 9th \(world\) and 2nd \(UK\) by QS 2020](#)
- **China University of Petroleum** Qingdao, China
B.E. Energy and Fuels (GPA 86/100) September. 2007 – July. 2011
[Subject ranked 14th \(world\) by USnews 2022](#)

AWARDS AND SCHOLARSHIPS

- Outstanding International Student **Scholarship** - Xinjiang (top 20 in the UK) 2016
- James-Watt **Scholarship**, Heriot-Watt University 2014 - 2016
- SINOPEC Research **Scholarship** 2014 - 2016
- Science & Technology Innovation **Award and Scholarship**, China University of Petroleum 2008 and 2009
- Chinese High School **Physics Olympiad, Silver Award**, 21st Provincial (top <0.02%, 1st/ 2000 in the City) 2006

SELECTED PUBLICATIONS

- **Jin, C.**, Tanno, R., Mertzanidou, T., Panagiotaki, E., and Alexander, D.C.,. [Learning to Downsample for Segmentation of Ultra-High Resolution Images](#). **ICLR 2022**.
- Xu, M., Zhou, Y., **Jin, C.**, Blumberg, S., Wilson, F., Oxtoby, N., Alexander, D., and Jacob, J., [Learning Morphological Feature Perturbations for Semi-Supervised Segmentation](#). **MIDL 2022**.
- Xu, M., Zhou, Y., Hu, Y., **Jin, C.**, Oxtoby, N., Alexander, D., and Jacob, J., Semi-Supervised Segmentation of Medical Images with Pseudo Labels. **MICCAI 2022 (Under Review)**.
- **Jin, C.**, Tanno, R., Xu, M., Mertzanidou, T. and Alexander, D.C.,. [Foveation for Segmentation of Ultra-High Resolution Images](#). **arXiv 2020**.
- Zhang, L., Tanno, R., Xu, M., **Jin, C.**, Jacob, J., Cicarrelli, O., Barkhof, F. and Alexander, D., [Disentangling Human Error from Ground Truth in Segmentation of Medical Images](#). **NeurIPS 2020**.

CHEN JIN

Research Fellow, UCL, UK

web: <https://chenjin.netlify.app/>

- **Jin, C.**, Tanno, R., Xu, M., Mertzaniidou, T. and Alexander, D.C., October. [Foveation for Segmentation of Mega-Pixel Histology Images](#). **MICCAI 2020**.
- Zhang, L., Tanno, R., Bronik, K., **Jin, C.**, Nachev, P., Barkhof, F., Ciccarelli, O. and Alexander, D.C., October. [Learning to Segment When Experts Disagree](#). **MICCAI 2020**.
- Olga, F., **Jin, C.**, Mertzaniidou, T., Alexander, D.C. and Bakal, C. Deep Neighbour-Based Multiple Instance Learning for Histopathology Image Classification. **Journal (Under Review)**.

RESEARCH PROJECTS

Efficient sampling for segmentation of ultra-high resolution images

- Developed an **attention-based deformable down-sampling** method for end-to-end optimisation of low-cost segmentation accuracy at a limited budget, improved accuracy of up to 10% and saved computation of up to 90% over SoTA, and published at [ICLR 2022](#) as the **leading author**.
- Developed an **attention-based end-to-end trainable “patch loader”** to hard/soft sample the best size-resolution trade-off configuration at each location for optimal segmentation accuracy, achieved SoTA, published at [MICCAI/arxiv extension](#) as the **leading author**.
- Co-authored **semi-supervised** methods published at [MIDL 2022](#) and **MICCAI 2022 (submitted)**.

Reconstruction, image super-resolution and label fusion

- Contributed to **problem formulation** and **STAPLE label fusion** baseline of the [MICCAI/NeurIPS 2020 publication](#) on disentangling inter-reader annotation variability in segmentation;
- Applied **3D reconstruction** for tumour cells images and co-authored a paper **submitted to Nature Genetics**.
- Developed a deep **recurrent multiscale pyramid network** for image **super-resolution** task.

Multiscale image analysis and reconstruction (PhD Thesis, 2017)

- Developed a **multi-scale/moda image processing, fusion and reconstruction** protocol for porous rock analysis.
- Developed a **weak supervised** iterative convolutional net (based on filter banks, AdaBoost and auto-context) that improves **segmented** connectivity of thin linear fracture, **presented (2016)/ poster (2018) at conferences**.
- **3D** porous media **reconstruction** via multiple-point statistics method (conditional to neighbouring “patch”).
- Developed a mineral texture **classification** method based on **machine learning** (patch-wise **random forest**).

MENTORSHIP

- **Four UCL MSc projects (three distinctions):** D. Deak (2021) - CNN super-resolution, C. Alexandru (2021) GAN super-resolution. E. Edwards (2021) - CNN detection, K. Grigoriadis (2020) - CNN segmentation.
- **PhD co-supervision, Olga Fourkioti** (ICR, 2019-Present), who performs research on deep multiple instances learning for histological image classification.

TALKS AND ACADEMIC SERVICES

- **Foveation for Segmentation of Mega-Pixel Histology Image:** [IPMI 2021](#) guest Lecture, [MedICSS 2021 Summer School](#) (top 3 best projects out of 14), [MICCAI 2020, CMIC open day](#).
- **Reviewer:** TIP, MICCAI

SKILLS

- Python, Matlab, C/C++, R, JavaScript, Batch.
- Pytorch, Tensorflow, Keras, Jupyter, Linux, Cloud/Cluster, ImageJ (FIJI), ParaView, Cinema4D.