

EDUCATION

- **Max Planck Institute for Biological Cybernetics** Germany, Oct 2019-now
Ph.D. researcher, Advisors: Prof. Dr. Klaus Scheffler, PD. Dr. Gabriele Lohmann
- **Eberhard Karl Universität Tübingen** Germany, Oct 2019-now
Ph.D. Candidate, Graduate Training Center of Neuroscience
- **Hong Kong Polytechnic University** Hong Kong, Sep 2017-Mar 2019
MSc., Mechanical Engineering in Aeronautical Engineering GPA: 3.0/4.0
- **Qing Hai University** China, Sep 2013-June 2017
BSc., Mechanical Engineering GPA: 3.7/4.0

TECHNICAL SKILLS AND INTERESTS

Languages: Chinese(Native), Cantonese(Fluent), English(Fluent), German(Basic)

Developer Tools: C/C++, Python, Matlab, Rust, Julia, VIM, Git, L^AT_EX

Frameworks: PyTorch, JAX, Caffe, distributed training

Areas of Interest: Generative models, stability of GAN, Score-matching models, Computational fluid dynamics, Optimal transport, Graph neural networks

PROJECTS

- **Brain MRI surface rendering from volume using implicit neural representation (Deep Learning)** 2023
Render brain surface from MRI volumes without using ground truth mesh in training
 - Implicit representation used for rendering the surface of the brain MRI
 - Training without paired mesh ground truth, which is required in other works
- **Stable GAN training for super-resolution on volumetric MRI data (Deep Learning)** 2021
We use super-resolution strategy to generate high-resolution MRI volumes, with the most indistinguishable details
 - Stability in GAN dynamics, efficient convergence with small training sample size
 - Our GAN model achieved best perceptual quality in both spatial and frequency domain, with a frequency-informed discriminator
 - The best generalizability in OOD data than any other SR models for medical images
- **Flexible segmentation network for brain MRI on various resolutions (Deep Learning)** 2021
A neural network model, trained on 3T MRI data using domain adaption, to segment 9.4T MRI data
 - SOTA segmentation accuracy on 9.4T MRI data
 - Benchmarking existing ML based segmentation method as well as traditional segmentation tools for 9.4T MRI data
- **Inductively coupled wireless MR detector for improving focal SNR (Neuroscience)** 2020
A wireless MRI coil with enhanced SNR for animal experiments in 14.1T scanner
 - Developed wireless MR detector that allows flexible experiment design, e.g. concurrently optogenetic recording with MRI under ROI of the coil
 - Analysis of laminar BOLD fMRI signal functional activity in somatosensory cortex
- **Laminar-specific functional connectivity mapping with multi-slice fMRI (Neuroscience)** 2020
Multi-regional line-scanning fMRI paired with optical calcium signal recording, in 14.1T scanner
 - Multi-slice BOLD fMRI is recorded concurrently with local neuronal calcium signal, via an optical fiber
 - Neuro-vascular coupling studied in both task-evoked and spontaneous recording of brain states in rats
- **Automated vision-based micro-surgical task execution through a robotic multi-arm system (Robotics)** 2018
The vision system adopted a segmentation network trained on RGB-D images
- **Computational fluid analysis on indoor ventilation system (Thermodynamics)** 2017
Numerically simulate the temperature and flow stream of the air in a room with one source and one sink

RECENT PUBLICATIONS(→[SEE ALL PUBLICATIONS](#))

1. DISGAN: Wavelet-informed discriminator guides GAN to MRI image Super-resolution with noise cleaning

ICCV Workshop on Computer Vision for Automated Medical Diagnosis 2023

2023

Wang, Q.; Mahler, L.; Steiglechner, J.; Birk, F.; Scheffler, K.; Lohmann, G.

2. A Three-Player GAN for Super-Resolution in Magnetic Resonance Imaging

MICCAI Workshop on Machine Learning for Clinical Neuroimaging 2023

2023

Wang, Q.; Mahler, L.; Steiglechner, J.; Birk, F.; Scheffler, K.; Lohmann, G.

3. Pretraining is All You Need: A Multi-Atlas Enhanced Transformer Framework for Autism Spectrum Disorder Classification

MICCAI Workshop on Machine Learning for Clinical Neuroimaging 2023

2023

Mahler, L.; Wang, Q.; Steiglechner, J.; Birk, F.; Heczko, S.; Scheffler, K.; Lohmann, G.

4. Super resolution for ultra-high fields MR images augmentation improving 9T MR image segmentation

Medical Imaging with Deep Learning(MIDL) 2022, Zürich

2022

Wang, Q.; Steiglechner, J.; Scheffler, K.; Lohmann, G.

5. Focal fMRI signal enhancement with implantable inductively coupled detectors

NeuroImage

2022

Chen, Y.; Wang, Q.; Choi, S.; Zeng, H.; Takahashi, K.; Qian, C.; Yu, X.

Joint first author