

# Susu Hu

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## WORK EXPERIENCE

AI for Health, Research Assistant Oct 2022 - Now

*National Center for Tumour Disease, Dresden, Germany*

- Implemented weakly supervised medical image segmentation on internal pancreas dataset, dice score improved by 10%
- **Master thesis:** neural fields learning for 3D reconstruction and non-rigid registration (submission in May 2023)

2D/3D Signal Processing, Research Assistant Apr 2022 - Sep 2022

*Fraunhofer IPA, Stuttgart, Germany*

- Automated 3D data acquisition and measurement from sensors with C/C++ scripts, 60 times speed-up in workflow
- Quantified the advantages of diverse sampling over uncertainty sampling in active learning for image labelling, and qualitatively evaluated different one-shot object tracking methods, guiding the next step in reducing human effort

Neural Network Quantization, Research Assistant Aug 2021 - Feb 2022

*Fraunhofer IPMS, Dresden, Germany*

- Experimented with an intra-layer mixed quantization training technique for both weights and activations in neural networks, explored layer sensitivities
- Achieved 2/8 times memory reduction and 2/30 times number of MAC operation reduction compared to the 8bit/FP32 counterparts while sacrificing virtually no accuracy against 8bit and around 2% against the FP32 model

Software Developer, Working Student Jun 2021 - Feb 2022

*Robotron Datenbank, Dresden, Germany*

- Implemented and trained computer vision models for real-time multi-object tracking using TensorFlow and PyTorch for industrial quality control
- Benchmarked models performance and contributed to the successful product delivery to customers

## EDUCATION

Master of Science in Computational Modelling and Simulation 2019 - 2023

*Dresden University of Technology, Germany* GPA 2.1

- **Relevant coursework:** machine learning, computer vision, stochastic and probabilities, statistics, data visualisation
- **Scholarship:** granted with SECAI scholarship for excellent students in artificial intelligence

Bachelor of Science in Logistics Engineering 2009 - 2013

*Nanjing Agricultural University, China* GPA 2.2

- **Relevant coursework:** computer science basics, natural science and engineering basics
- **Scholarship:** granted with merit student scholarship

## PROJECTS

Gaussian processes and neural networks Sep 2020 - Mar 2021

*Dresden University of Technology*

- Studied Gaussian processes mathematical theories and implemented convolutional and non-convolutional Gaussian processes on image classification tasks
- Experimented with second derivative and first derivative optimization methods. Approximated posterior distribution via variational inference method
- Exploited sparse Gaussian processes to improve computation efficiency

Tractography scientific visualisation Apr 2020 - Sep 2020

*Dresden University of Technology*

- Studied techniques of tractography and implemented scalar and spherical colour mapping on brain fiber tracts based on diffusion measurement of free water in the brain

## PUBLICATIONS

Layer Sensitivity Aware CNN Quantization for CIM Architectures

2022 International Conference on Soft Computing & Machine Intelligence

## SKILLS

**Python:** PyTorch, OpenCV, open3D, Pandas, Keras, TensorFlow, scikit-learn, Huggingface, FastAPI, JAX etc.

**DevOps:** Git, Linux, Docker, Microsoft Azure, SLURM

**Others:** C/C++, blender, R, SQL

## LANGUAGES

English - C1, German - A2, Chinese - native speaker