

# Susu Hu

susu.hu@outlook.com | 0049 152 57841966 | <https://susuhu.github.io> | Dresden, Germany

## WORK EXPERIENCE

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### Doctoral Candidate

Jun 2023 - Now

*National Center for Tumour Disease, Dresden, Germany*

- Geometry machine learning for surgical outcome prediction

### 3D Deep Learning, Research Assistant

Oct 2022 - May 2023

*National Center for Tumour Disease, Dresden, Germany*

- **Master thesis:** Leveraging Deep Neural Fields for Navigation of Middle Ear Diagnostics **GPA 1.3**
  - Successfully learnt descriptive yet compact latent space for implicit 3D shape representation
  - Conducted meaningful latent space PCA decomposition for 3D shape manipulation
  - Achieved geometry change with hierarchical mesh differentiation and good non-rigid registration results
- Assistant job: Implemented weakly supervised medical image segmentation on internal pancreas dataset, dice score improved by 10%

### 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

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### Master of Science in Computational Modelling and Simulation

2019 - 2023

*Dresden University of Technology, Germany*

- **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*

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

## SKILLS

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

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

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

## LANGUAGES

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