

Qiushi NIE

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Research interests: medical image analysis, medical image registration, artificial intelligence

EDUCATION

Southern University of Science and Technology
Department of Computer Science and Engineering
Master's Degree in Electronic Science and Technology

Shenzhen, China

09/2022- 06/2025(Expected)

- Overall GPA: 3.68/4.0
- Relevant Courses: Advanced Artificial Intelligence, Advanced Algorithms, Intelligent Data Analysis, Brain Intelligence and Machine Learning

Southern University of Science and Technology
Department of Computer Science and Engineering
Bachelor of Engineering in Computer Science and Technology

Shenzhen, China

09/2018- 06/2022

- Overall GPA: 3.86/4.0
- Relevant Courses: Artificial Intelligence, Deep Learning

PUBLICATIONS

- [1] Nie, Q., Zhang, X., Hu, Y. et al. **Medical image registration and its application in retinal images: a review.** *Vis. Comput. Ind. Biomed. Art* 7, 21 (2024). <https://doi.org/10.1186/s42492-024-00173-8> (Accepted)
- [2] Nie, Q., Zhang, X., Chen, C. et al. **Reparameterized multi-scale transformer for deformable retinal image registration.** *Mach. Intell. Res.* (2024). <https://doi.org/10.1007/s11633-024-1525-1> (Accepted)
- [3] Zhang, X., Nie, Q., Xiao, Z., et al. **Dual-view pyramid pooling in deep neural networks for improved medical image classification and confidence calibration.** (2024) (Under Review, arXiv preprint available: 2408.02906)
- [4] Liu, J., Li S., Nie, Q., Zhang, X. **Multimedia Intelligent Computing.** (2024) (Manuscript in preparation, Chinese Textbook)
- [5] Zhou, X., Hao, L., Nie, Q., et al. **A novel multi-focus fusion network for retinal microsurgery.** *2022 IEEE 19th International Symposium on Biomedical Imaging (ISBI)*. IEEE, 2022: 1-5. (Accepted)
- [6] Hu, Y., Dong, S., Gong, M., Nie, Q., Liu, J. **Self-Supervised Structure-Preserved Image Registration Framework for Multimodal Retinal Images.** *2023 6th International Conference on Information Communication and Signal Processing (ICICSP)*. IEEE, 2023: 134-138. (Accepted)

RESEARCH EXPERIENCES

iMED Research Group (SUSTech)

Shenzhen, China

iMED is a research team led by Prof. Jiang Liu that focuses on artificial intelligence in ophthalmology. The team has exclusive medical big data resources, in-depth cooperation with well-known international and domestic hospitals and equipment manufacturers.

Co-Author, Advisor: Dr. Xiaoqing Zhang

12/2023-present

- **Project: Dual-view pyramid pooling in deep neural networks for improved medical image classification and confidence calibration.**
Description
 - Developed a novel pyramid pooling method Dual-View Pyramid Pooling (DVPP) for image classification
 - Reviewed and investigated the relationship of Spatial Pooling (SP) and the Cross-Channel Pooling (CCP)**Contribute**
 - Designed and implemented the proposed pooling methods
 - Led the entire experimental section, including comparison experiments and ablation studies**Achievement**
 - The improved DVPP outperformed state-of-the-art pooling methods on six 2D/3D medical image classification dataset in terms of accuracy and confidence calibration
 - Submitted a paper [3] in *International Journal of Computer Vision (IJCV)*, which is currently under

review

First Author, Advisor: Prof. Jiang Liu

08/2023- 03/2024

- **Project: Reparameterized Multi-scale Transformer for Deformable Retinal Image Registration**
Description
 - Developed a hierarchical hybrid CNN and Transformer architecture for deformable retinal image registration
 - Proposed the reparameterized multi-scale spatial attention block to dynamically fuse multi-scale features**Contribute**
 - Designed and implemented the proposed RMFormer
 - Conducted elaborate comparison experiments and ablation studies
 - Writing and revising the main manuscript**Achievement**
 - The proposed RMFormer demonstrates effectiveness on a 2D retinal dataset and a 3D MRI dataset
 - Published a paper [2] in *Machine Intelligence Research (MIR)*

First Author, Advisor: Prof. Jiang Liu

11/2022- 02/2024

- **Project: Medical Image Registration and Its Application in Retinal Images: A Review**
Description
 - Conducted a systematic review on medical image registration and application in retinal image registration
 - Provide a comparison between the retinal image registration methods and the general methods**Contribute**
 - About 200+ literature research on medical image registration
 - Designed and organized the structure of the review
 - Writing and revising the main manuscript**Achievement**
 - Published a paper [1] in *Visual Computing for Industry, Biomedicine, and Art (VCIBA)*

TEACHING EXPERIENCE

Teaching Assistant

03/2022-present

- **Course: Introduction to (Medical) Artificial Intelligence, Multimedia Information Processing**
 - Scheduling TAs, marking assignments, coming up with exam questions, and hosting information sessions for final projects.
 - Lecture given in English of AI platforms (Python, Scikit-Learn, and PyTorch)
 - Gave lectures of state-of-the-art multimedia AI advancement (e.g., Segment Anything Model).
 - Participated in writing the textbooks for these courses, including [4].

After-school Tutor

03/2019-06/2022

- **Course: Introduction to Computer Programming (Java), Introduction to Computer Science**
 - Working as an after-school tutor every semester from 2019 to 2022: gave extra lectures of the course every weekend, provide assistance to students' coursework.
 - Responsible for review sessions every semester before final exam to **1600+** students.

SKILLS

- **Programming Languages:** Proficient in Java and Python (NumPy, Scikit-learn, PyTorch, ...).
- **Other Tools:** Proficient in VSCode, PyCharm, LaTeX, PowerPoint, and Git.

HONORS&AWARDS

- The second prize of outstanding student scholarship in SUSTech **2018- 2020**
- The first prize of outstanding student scholarship in SUSTech **2020- 2021**
- The Outstanding Graduates Prize in Department of Computer Science and Engineering, SUSTech **2022**
- The Top Ten Graduates Nomination Award in SUSTech **2022**
- The Star of iMED Award (for those who contributed most in my research group iMED) **2023**
- The Outstanding Teaching Assistant in SUSTech **2021- 2023**