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BRIEF BIO

Since 2022, I have served as a Senior Algorithm Engineer at Alibaba DAMO Academy, collaborating closely with an exceptional team of colleagues and physicians. My research centers on deep learning applied to **product-driven** innovations in medical imaging, where I have spearheaded projects in diagnostic imaging, including but not limited to **organ segmentation** and **radiotherapy target volume segmentation**. Previously, I worked as a Senior Research Scientist at PAII Inc., and I have been fortunate to receive supervision and mentorship from Dr. Le Lu.

WORK EXPERIENCE

01/2022 – now **Alibaba DAMO Academy USA,**
Senior Algorithm Engineer
09/2019 – 12/2021 **PAII Inc,**
Senior Research Scientist
02/2019 – 05/2019 **Pactera Technology**
Research Scientist Internship

EDUCATION

2010 – 2019 **University of South Carolina, South Carolina, USA**
Ph. D. in Computer Science
2008 – 2010 **Tianjin University, Tianjin, China**
M. S. Eng. in Information and Informatics Engineering
2004 – 2008 **Dalian University of Technology, Dalian, China**
B. S. Eng. in Electronic Engineering

SELECTED PAPERS

[1] **Guo, D.***, Ji, Z.*, Wang, P., Yan, K., Lu, L., Xu, M., ... & Jin, D. (2023). Continual segment: Towards a single, unified and non-forgetting continual segmentation model of 143 whole-body organs in CT scans. In Proceedings of the IEEE/CVF ***International Conference on Computer Vision*** (pp. 21140-21151).

[2] ***Guo, D.****, Ye, X.*, Ge, J., Yan, S., Xin, Y., Song, Y., ... & Ho, T. Y. (2022). Comprehensive and clinically accurate head and neck cancer organs-at-risk delineation on a multi-institutional study. ***Nature Communications***, 13(1), 6137.

[3] **Guo, D.***, Jin, D*., Ho, T. Y., Harrison, A. P., Xiao, J., Tseng, C. K., & Lu, L. (2021). DeepTarget: Gross tumor and clinical target volume segmentation in esophageal cancer radiotherapy. ***Medical Image Analysis***, 68, 101909.

[4] **Guo, D.,** Jin, D., Zhu, Z., Ho, T. Y., Harrison, A. P., Chao, C. H., ... & Lu, L. (2020). Organ at risk segmentation for head and neck cancer using stratified learning and neural architecture search. In Proceedings of the IEEE/CVF Conference on ***Computer Vision and Pattern Recognition*** (pp. 4223-4232).

PUBLICATIONS

[5] Ye, X.*, **Guo, D.***, Zhao, L., Xie, C., Zheng, D., Yang, H., ... & Jin, D. (2025). Development and validation of AI delineation of the thoracic RTOG organs at risk with deep learning on multi-institutional datasets. ***Intelligent Oncology***, 1(1), 61-71.

[6] Zhu, V., Ji, Z., **Guo, D.**, Wang, P., Xia, Y., Lu, L., ... & Jin, D. (2024, October). Low-Rank Continual Pyramid Vision Transformer: Incrementally Segment Whole-Body Organs in CT with Light-Weighted Adaptation. In ***International Conference on Medical Image Computing and Computer-Assisted Intervention*** (pp. 371-381). Cham: Springer Nature Switzerland.

[7] Li, H., Wang, Y., Zhu, J., **Guo, D.**, Yu, Q., Yan, K., ... & Jin, D. (2024, October). Semi-supervised Lymph Node Metastasis Classification with Pathology-Guided Label Sharpening and Two-Streamed Multi-scale Fusion. In ***International Conference on Medical Image Computing and Computer-Assisted Intervention*** (pp. 623-633). Cham: Springer Nature Switzerland.

[8] Yu, Q., Wang, Y., Yan, K., Li, H., **Guo, D.**, Zhang, L., ... & Jin, D. (2024, September). Effective Lymph Nodes Detection in CT Scans Using Location Debiased Query Selection and Contrastive Query Representation in Transformer. In ***European Conference on Computer Vision*** (pp. 180-198). Cham: Springer Nature Switzerland.

[9] Wang, P., **Guo, D**., Zheng, D., Zhang, M., Yu, H., Sun, X., ... & Jin, D. (2024). Accurate airway tree segmentation in ct scans via anatomy-aware multi-class segmentation and topology-guided iterative learning. IEEE ***Transactions on Medical Imaging***.

[10] Yan, K., Jin, D., **Guo, D.**, Xu, M., Shen, N., Hua, X. S., ... & Lu, L. (2023, October). Anatomy-Aware Lymph Node Detection in Chest CT Using Implicit Station Stratification. In ***International Conference on Medical Image Computing and Computer-Assisted Intervention*** (pp. 299-310). Cham: Springer Nature Switzerland.

[11] Li, Z., Li, Y., Li, Q., Wang, P., **Guo, D.**, Lu, L., ... & Hong, Q. (2023). Lvit: Language meets vision transformer in medical image segmentation. IEEE ***Transactions on Medical Imaging***.

[12] Zhang, M., Wu, Y., Zhang, H., Qin, Y., Zheng, H., Tang, W., ... & Gu, Y. (2023). Multi-site, multi-domain airway tree modeling. ***Medical Image Analysis***, 90, 102957.

** - equal contribution*

[13] Jin, D., **Guo, D**., Ge, J., Ye, X., & Lu, L. (2022). Towards automated organs at risk and target volumes contouring: Defining precision radiation therapy in the modern era. ***Journal of the National Cancer Center***, 2(4), 306-313.

[14] Huo, Y., Jin, D., Zhang, Y., **Guo, D.**, & Wang, Z. (2022). Machine Learning for Quantitative Neuroimaging Analysis. ***Frontiers in Neuroscience***, 16, 925819.

[15] Yan, K., Cai, J., Jin, D., Miao, S., **Guo, D.**, Harrison, A. P., ... & Lu, L. (2022). SAM: Self-supervised learning of pixel-wise anatomical embeddings in radiological images. IEEE ***Transactions on Medical Imaging***, 41(10), 2658-2669.

[16] Ye, X., **Guo, D.**, Tseng, C. K., Ge, J., Hung, T. M., Pai, P. C., ... & Ho, T. Y. (2022). Multi-institutional validation of two-streamed deep learning method for automated delineation of esophageal gross tumor volume using planning CT and FDG-PET/CT. ***Frontiers in Oncology***, 11, 785788.

[17] **Guo, D.**, Ge, J., Yan, K., Wang, P., Zhu, Z., Zheng, D., ... & Jin, D. (2022, September). Thoracic lymph node segmentation in CT imaging via lymph node station stratification and size encoding. In **International Conference on Medical Image Computing and Computer-Assisted Intervention** (pp. 55-65). Cham: Springer Nature Switzerland.

[18] **Guo, D.**, Ye, X., Ge, J., Di, X., Lu, L., Huang, L., ... & Jin, D. (2021). Deepstationing: thoracic lymph node station parsing in ct scans using anatomical context encoding and key organ auto-search. In ***Medical Image Computing and Computer Assisted Intervention–MICCAI*** 2021: 24th International Conference, Strasbourg, France, September 27–October 1, 2021, Proceedings, Part V 24 (pp. 3-12). Springer International Publishing.

[19] Liu, F., Yan, K., Harrison, A. P., **Guo, D.**, Lu, L., Yuille, A. L., ... & Jin, D. (2021). SAME: Deformable image registration based on self-supervised anatomical embeddings. In ***Medical Image Computing and Computer Assisted Intervention–MICCAI*** 2021: 24th International Conference, Strasbourg, France, September 27–October 1, 2021, Proceedings, Part IV 24 (pp. 87-97). Springer International Publishing.

[20] Zhu, Z., Jin, D., Yan, K., Ho, T. Y., Ye, X., **Guo, D.**, ... & Lu, L. (2020, September). Lymph node gross tumor volume detection and segmentation via distance-based gating using 3D CT/PET imaging in radiotherapy. In ***International Conference on Medical Image Computing and Computer-Assisted Intervention*** (pp. 753-762). Cham: Springer International Publishing.

[21] Chao, C. H., Zhu, Z., **Guo, D.**, Yan, K., Ho, T. Y., Cai, J., ... & Jin, D. (2020, September). Lymph node gross tumor volume detection in oncology imaging via relationship learning using graph neural network. In ***International Conference on Medical Image Computing and Computer-Assisted Intervention*** (pp. 772-782). Cham: Springer International Publishing.

[22] Yu, H., **Guo, D.,** Yan, Z., Fu, L., Simmons, J., Przybyla, C. P., Wang, S. (2020) Weakly Supervised Easy-to-hard Learning for Object Detection in Image Sequences. ***Neurocomputing***.

[23] Jin, D., **Guo, D.**, Ho, T. Y., Harrison, A. P., Xiao, J., Tseng, C. K., & Lu, L. (2019). Deep esophageal clinical target volume delineation using encoded 3D spatial context of tumors, lymph nodes, and organs at risk. In ***Medical Image Computing and Computer Assisted Intervention–MICCAI*** 2019: 22nd International Conference, Shenzhen, China, October 13–17, 2019, Proceedings, Part VI 22 (pp. 603-612). Springer International Publishing.

[24] Jin, D., **Guo, D.**, Ho, T. Y., Harrison, A. P., Xiao, J., Tseng, C. K., & Lu, L. (2019). Accurate esophageal gross tumor volume segmentation in PET/CT using two-stream chained 3D deep network fusion. In ***Medical Image Computing and Computer Assisted Intervention–MICCAI*** 2019: 22nd International Conference, Shenzhen, China, October 13–17, 2019, Proceedings, Part II 22 (pp. 182-191). Springer International Publishing. ***Oral***

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[27] **Guo, D.,** Guo, D., Zhu, L., Lu, Y., Yu, H., & Wang, S. (2018). Small object sensitive segmentation of urban street scene with spatial adjacency between object classes. IEEE ***Transactions on Image Processing***, 28(6), 2643-2653.

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[33] Fridriksson, J., **Guo, D.**, Fillmore, P., Holland, A., Rorden, C. (2013). Damage to the anterior arcuate fasciculus predicts non-fluent speech production in aphasia. ***Brain***, 136(11), 3451-3460.

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CLINICAL ABSTRACTS

[35] Deep Learning-Based Multi-Modality Segmentation of Primary Gross Tumor Volume in CT and MRI for Nasopharyngeal Carcinoma, *RSNA*, 2023
[36] Dosimetry Validation Study for Automated Head and Neck Cancer Organs at Risk Segmentation Using Stratified Learning and Neural Architecture Search, *RSNA*, 2022
[37] Evaluation of Intra-Observer Variation for Deep Learning-Generated Head and Neck Organs at Risk Segmentation, *RSNA*, 2022
[38] AI Model of Using Stratified Deep Learning to Delineate the Organs at Risk (OARs) for Thoracic Radiation Therapy, *RSNA*, 2022
[39] Comprehensive Head and Neck Organs at Risk Segmentation using Stratified Learning and Neural Architecture Search, *ASTRO, 2021*
[40] Deep Learning-Based Lymph Node Gross Tumor Volume Detection via Distance-guided Gating using CT and 18F-FDG PET in Esophageal Cancer Radiotherapy, ASTRO, 2021
[41] Anatomy Guided Thoracic Lymph Node Station Delineation in CT using Deep Learning Model, *ASTRO, 2021*
[42] Automated Esophageal Gross Tumor Volume Segmentation in 18F-FDG PET and CT for Radiotherapy using Two-Stream 3D Deep Network Fusion, *SNMMI, **oral**, 2020*
[43] Automated Esophageal Clinical Target Volume Delineation using Encoded 3D Spatial Context of Tumors, Lymph Nodes, and Organs At Risk, *RSNA, 2020*
[44] Lymph Node Gross Tumor Volume Detection and Segmentation via Distance-based Gating Using CT/PET Imaging in Esophageal Cancer Radiotherapy, *RSNA, **oral**, 2020*
[45] Organs at Risk Segmentation for Head and Neck Cancer Using Stratified Learning and Neural Architecture Search, *RSNA, **oral**, 2020*

UNDER REVIEW/PREPARATION

[46] **Guo, D.***, Ji, Z.*, Su, Y*, Zheng, D*, ... & Lu, L, Jin, D., Ye, X. A Continual Learning-driven CT Model for Accurate And Generalizable Segmentation of Clinically Comprehensive And Fine-grained Whole-body Anatomies. **(targetting at Nature Biomedical Engineering)**

PATENTS

[47] Device and method for detecting clinically important objects in medical images with distance-based decision stratification, 2023
[48] Method and device for stratified image segmentation, 2022
[49] Anatomy Guided Thoracic Lymph Node Station Delineation in CT using Deep Learning Model, 2021
[50] Device and method for thoracic lymph node station parsing, in submission, 06/2021.
[51] Device and method for detecting clinically important objects in medical images with distance-based decision stratification, U.S. provisional patent application no. 62,962,281, USPTO regular patent application no. 17,094,984, patent date filed 01/17/2020
[52] Device and method for organs at risk segmentation using stratified learning and neural architecture search, U.S. non-provisional patent application no. 62,962,277, USPTO regular patent application no. 16,928,521, patent date filed 01/17/2020.
[53] Clinical target volume delineation method and electronic device, U.S. patent no. 16,546,615
[54] Gross tumor volume segmentation method and computer device, U.S. patent no. 10,929,981
[55] System and method for large-scale lane marking detection using multimodal sensor data. U.S. patent no. 10,528,823.

*** - *equal contribution***