DANFENG GUO

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RESEARCH AREA

Medical data analysis using deep learning. Natural language processing. Visual question answering.

EDUCATION

UCLA, Los Angeles, CA *01/2020 to Present*
PhD in Computer Science Overall GPA: 3.58/4
UCLA Computer Graphics & Vision Laboratory

UCLA, Los Angeles, CA *Graduated: 03/2017*
MS in Electrical Engineering Overall GPA: 3.43/4

The Hong Kong Polytechnic University, Hong Kong *Graduated: 06/2015*
Bachelor of Engineering in Electrical Engineering Overall GPA: 3.83/4
Bachelor of Business Administration Overall GPA: 3.32/4

RESEARCH EXPERIENCE

Computer Graphics & Vision Lab, Los Angeles, USA
PhD 01/2019-Present
Encoding inter-slice information for anisotropic medical images

· Explored existing approaches to tackle the anisotropy problem of 3D medical images. Designed transformer-based models that outperformed previous methods and achieved over 0.81 dice score on lung cancer segmentation task.

CuraCloud Corporation, Beijing, China
Algorithm Intern 07/2020-10/2020
Computer-aided diagnosis of brain hemorrhage

· Conducted rib fracture detection task and achieved over 81% accuracy.
· Improved lung segmentation algorithm and successfully removed the disturbance of abnormal regions.

CuraCloud Corporation, Beijing, China
Algorithm Engineer 05/2018-12/2019
Computer-aided diagnosis of brain hemorrhage

· Intracranial hemorrhage detection using CNN-RNN network. Achieved patient-level accuracy over 95%
· Design multi-task model for simultaneous ICH classification and segmentation with accuracy over 90%
· 3D anchor-free hemorrhage detection using CenterNet and achieved 86% accuracy
· Encoded CT imaging and combined them with clinical data to predict the likelihood of hemorrhage expansion. Gained 80% accuracy.
· Studied different kinds of attention mechanisms including self attention and grad attention. Applied them to increase model accuracy or directly generate segmentation result
· Conducted medical image processing tasks such as volume reslicing, registration, denoising, labeling, skull stripping and DICOM information analysis.

Neurovascular Imaging Research Core, Dept. of Neurology, UCLA, Los Angeles, USA
Research Assistant 03/2017-04/2018
Research on statistically important factors related to hemorrhagic transformation

- Processed MRI database of stroke patients. Extracted features related to stroke and computed the corresponding medical parameters.
- Designed statistical models to analyze patients' MRI and predicted the likelihood of hemorrhage transformation.
- Brain main artery segmentation using a combination of U-Net and pixel-level classifier

ACADEMIC ACHIEVEMENTS

Danfeng Guo and Demetri Terzopoulos. A transformer-based network for anisotropic 3d medical image segmentation. *International Conference on Pattern Recognition*, Jan 2021

Danfeng Guo, Haihua Wei, Pengfei Zhao, Yue Pan, Hao-Yu Yang, Xin Wang, Junjie Bai, Kunlin Cao, Qi Song, Jun Xia, Feng Gao, and Youbing Yin. Simultaneous classification and segmentation of intracranial hemorrhage using a fully convolutional neural network. *International Symposium on Biomedical Imaging*, Apr 2020

Hai Ye, Feng Gao, Youbing Yin, **Danfeng Guo**, Pengfei Zhao, Yi Lu, Xin Wang, Junjie Bai, Kunlin Cao, Qi Song, Heye Zhang, Wei Chen, Xuejun Guo, and Jun Xia. Precise diagnosis of intracranial hemorrhage and subtypes using a three-dimensional joint convolutional and recurrent neural network. *European Radiology*, Apr 2019

Y. Yu, **Danfeng Guo**, M. Lou, D. S. Liebeskind, and F. Scalzo. Prediction of hemorrhagic transformation severity in acute stroke from source perfusion mri. *IEEE Transactions on Biomedical Engineering*, PP(99):1–1, 2017

TECHNICAL STRENGTHS

Computer Languages	Python, R, SQL, HTML&CSS
Software & Tools	PyTorch, MATLAB, 3DSlicer, ITK, COMSOL, Solidwork

LEADERSHIP, SERVICE AND AWARDS

Peer Tutor, The Hong Kong Polytechnic University	10/2013-06/2015
Vice President, the Hong Kong Polytechnic University Debate Association	11/2011-05/2013
Scholarship Recipient, the Hong Kong Polytechnic University	2011-2012