Haotian Jiang

Address: 2714 Euclid Heights Blvd, Cleveland, OH, 44106 Tel: 219-765-9878 Email: hxi172@case.edu

Hard working and enthusiastic learner with significant programming and research experience. Proficient in Torch/PyTorch and familiar with TensorFlow. Proficient in Java and Python, and familiar with C++.

EDUCATION

Ph.D. Candidate, Computer Engineering

Case Western Reserve University, Cleveland, OH

Courses: Machine Learning, Data Mining, Mathematics of Data Mining and Pattern Recognition, Computer Vision

Bachelor of Engineering, Electrical Engineering

Northwestern Polytechnical University, Shannxi, China

WORK EXPERIENCE

Applied Research Intern, NVIDIA Corp, Bethesda, MD

 Devise and implement cascade 3D Mask-RCNN with relation module for multi-organ detection/segmentation using CT images and for prostate cancer detection/segmentation using MRI images.

- Acquire promising detection results for spleen, right kidney, left kidney, pancreas and liver. 524 out of 551 organs having IOU more than 50% and 540 out of 551 organs having IOU more than 40%.
- Work on multi-resolution input. An 3D Unet-based architecture is used to replace the original mask branch. Acquire dice of 0.94 for liver, 0.92 for spleen, 0.92 for right kidney, 0.91 for left kidney and 0.70 for pancreas.
- Improve average inference time for one 3D abdominal CT image from 15s to 2.5s.

Software Development Engineer Intern, PAII Inc, Palo Alto, CA

- Work for Ping An AI Institute (PAII Inc) on medical image analysis.
- Implement an end-to-end PyTorch training and evaluating algorithm for whole-slide images of histological lymph node sections using a workstation with four GeForce GTX 1080 Ti.
- Detect breast cancer metastases with accuracy of 75.22% using unsupervised feature learning and KNN.
- Evaluate a neural conditional random field deep learning algorithm using PyTorch.

SKILLS

• Programming Language: Java, C++, Python, C, Lua, SHELL

• Platform/tools: PyTorch, TensorFlow, Android Studio, Git, OpenCV, Docker, Redis, Latex, Vim, Matlab SELECTED PROJECTS

Hierarchical Distributed Deep Learning System on Mobile Devices in IoT Environment 04/2016-02/2019

- Implemented CNN and LSTM on Android platform and built privacy-preserving distributed learning system.
- Investigated two learning protocols (round robin, asynchronous) which are stable with missing update.
- Adopted hierarchical learning strategy to take advantage of the computing resources on the server. ٠
- Achieved 100% reconstruction rate using round robin and kept all data in local.

Melanoma Recognition and Segmentation

• Developed a melanoma recognition system using PyTorch and recognized melanoma successfully with overall accuracy of 74.28%, recall of 61.33% for the public ISBI 2017 dataset.

• Segmented lesion area using fully convolutional neural network with accuracy of 83%.

02/19/2019-08/23/2019

06/01/2018-08/31/2018

Research Assistant/Teaching Assistant

09/2010-07/2014

09/2014-12/2019

07/2017-12/2018

• Constructed an ensemble graph with multiple features (Mutual information, cross correlation and texture etc), and discovered the hidden correlations across images using random walk with restart (RWR).

• Developed an interactive skin lesion segmentation system using generative multi-walker RWR process.

Hidden Smile Correlation Discovery using Random Walk with Restart

- Detected faces and located facial fiducial points using conditional random forest.
- Revealed relevance scores between smiles across subjects by a succession of Markov random steps.
- Classified four levels of smiles with accuracy of 78.17% using UVA-NEMO smile dataset.

AR-based Food Nutrition Visualization System on Google Glass

• Captured region of interest, employed Google reverse image search, used Jsoup (Java HTML Parser) to parse the web pages, extracted the image information and accessed online database to acquire the nutrition information.

• Implemented Augmented Reality techniques (LDB and ORB) on Android platform, track object and render nutrition information on the food.

CERTIFICATION

Statistical Learning with Distinction, Stanford University Online

Identifier Number: a70711de2471410cb55831e29bece36c

SELECTED PUBLICATIONS

• **Haotian Jiang**, James Starkman, Yu-Ju Lee, Huan Chen, Xiaoye Qian, Ming-Chun Huang, "Distributed Deep Learning Optimized System over the Cloud and Smart Phone Devices", Accepted by IEEE Transactions on Mobile Computing, 2019.

• Haotian Jiang, Mustafa Coskun, Alaa Badokhon, Menghan Liu, Ming-Chun Huang, "Hidden Smile Correlation Discovery across Subjects using Random Walk with Restart", IEEE Transactions on Affective Computing, 2017.

• **Haotian Jiang**, James Starkman, Ming-Chun Huang, "Food Nutrition Visualization on Google Glass: Design Trade-off and Field Evaluation", IEEE Consumer Electronics Magazine, 2018.

• Haotian Jiang, Yi Cai, Xiao Zeng, Ming-Chun Huang, "Does Background Really Matter? Worker Activity Recognition in Unconstrained Construction Environment", IEEE 15th International Conference on Body Sensor Networks (BSN), 2018.

• Haotian Jiang, James Starkman, Chih-Hung Kuo, and Ming-Chun Huang, "AcuGlass: Quantifying Acupuncture Therapy using Google Glass", EAI International Conference on Body Area Networks (Bodynets'15), Sydney, Australia, 2015.

• Menghan Liu, **Haotian Jiang**, Jia Chen, Alaa Badokhon, Xuetao Wei, Ming-Chun Huang, "A collaborative privacy-preserving deep learning system in distributed mobile environment", International Conference on Computational Science and Computational Intelligence (CSCI), 2016.

• Menghan Liu, **Haotian Jiang**, Jia Chen, Ming-Chun Huang, "Tidal Volume Estimation Using Portable Ultrasound Imaging System", IEEE Sensors Journal (**SJ**), 2016.

• Taiyu Chen, Xiaoliang Zhang, **Haotian Jiang**, Golnoush Asaeikheybari, Nikhil Goel, Monica Webb Hooper, Ming-Chun Huang, "Are You Smoking? Automatic Alert System Helping People Keep Away from Cigarettes", IEEE/ACM International Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE), 2018.

• Diliang Chen, Jia Chen, **Haotian Jiang**, Ming-chun Huang, "Risk Factors Identification for Work-Related Musculoskeletal Disorders with Wearable and Connected Gait Analytics System", IEEE/ACM International Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE), 2017.

• Yi Cai, Yifan Guo, **Haotian Jiang**, Ming-chun Huang, "Machine-learning Approaches for Recognizing Muscle Activities Involved in Facial Expressions Captured by Multi-channels Surface Electromyogram", Smart Health, 2017.

• Golnoush Asaeikheybari, Justin Green, Xiaoye Qian, **Haotian Jiang**, Ming-Chun Huang, "Medical Image Learning from A Few/Few Training Samples: Melanoma Segmentation Study", IEEE International Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE), 2019.

06/2016-11/2016

11/2015-06/2016

12/2018-Present