Jiayun Li

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EDUCATION

University of California, Los Angeles (UCLA)   Mar. 2021
Ph.D, Bioengineering, GPA 4.00/4.00
Research Topics: Computer vision; Machine learning algorithms; Statistics, Informatics
Dissertation: Large-scale Whole Slide Image Analysis with Deep Learning Methods to Improve Prostate Cancer Diagnosis
Honors: Finalist in AMIA Student Paper Competition, UCLA Graduate Division University Fellowship

Fudan University   Jun. 2015
B.S., Electronic and Information Science and Technology, GPA 3.59/4.00
Honors: Fudan University Outstanding Student Awards

REVIEW EXPERIENCE

- Reviewed 1 paper for Frontier in Oncology journal
- Reviewed 1 paper for Computers in Biology and Medicine
- Reviewed 4 papers for MICCAI 2020
- Reviewed 8 papers for MICCAI 2021
- Reviewed 2 papers for AMIA 2020
- Reviewed 1 paper for AMIA 2021
- Reviewed 1 paper for Computational and structural biotechnology journal
- Reviewed 1 paper for Cancer medicine

EXPERIENCE

Computational Diagnostics Group, UCLA   Mar 2016 – Mar 2021
Graduate Student Researcher

- Built software to de-identify, normalize, and analyze Gigabyte image dataset
- Managed both computation and storage servers for the whole research group
- Developed multi-scale U-Net and EM-based models for supervised and semi-supervised image segmentation
- Developed attention-based MIL models for image classification and weakly-supervised object detection
- Developed a hierarchical graph pathomic network with self-supervised learning features to improve progression prediction
- 9 publications, 1 best student paper finalist, filed 2 patents
- Helped teach and prepare projects for the programming lab course (graduate level)

Geo UGC Infra Team, Google   Jun 2020 – Sep 2020
Software Engineer Intern

- Implemented a data pipeline to extract signals (e.g., model predicted labels and knowledge graph hierarchy) produced by Google machine intelligence for over billion Geo-tagged photos
- Investigated and applied different unsupervised machine learning models (e.g., Word2Vec embedding models and graph Latent Dirichlet Allocation models) to identify representative photo topics for different places, which will be used across multiple clients (e.g., hotels and restaurants)
- Performed user experiments for models, and achieved around 7% performance improvement over the baseline model

Hotel Ads Team, Google   Jun 2019 – Sep 2019
Software Engineer Intern

- Designed and developed the pipeline to match hotel photos to aspects with Word2vec embedding models using the distributed computing framework (Flume C++) for over 300,000,000 hotels photos
- Evaluated the impression weighted coverage for newly discovered hotel photo topics using Google SQL

- Built 3 different demos and set up user experiment for a new photo filter chip design using Google's Web development framework to improve user interaction with hotel photos

Computer Vision Team, Ancestry.com Jun 2018 – Sep 2018

Data Scientist Intern

- Developed CNN-LSTM based image captioning models to generate stories (scene descriptions) and visualize relevant regions for user-uploaded photos using PyTorch and Tensorflow
- Published 2 papers and filed 2 patents for the detection model and the proposed image captioning model

PUBLICATIONS

- **Li, J.**, Sarma, K.V., Ho, K.C., Gertych, A., Knudsen, B.S. and Arnold, C.W., 2017. A multi-scale U-Net for semantic segmentation of histological images from radical prostatectomies. In AMIA Annual Symposium Proceedings (Vol. 2017, p. 1140)
- **Li, J.,** Speier, W., Ho, K.C., Sarma, K.V., Gertych, A., Knudsen, B.S. and Arnold, C.W., 2018. An EM-based semi-supervised deep learning approach for semantic segmentation of histopathological images from radical prostatectomies. Computerized Medical Imaging and Graphics, 69, pp.125-133
- **Li J.,** Li W., Sisk A., Ye H., Wallace W.D., Speier W. and Arnold, C.W., A multi-resolution model for histopathology image classification and localization with multiple instance learning. Computers in Biology and Medicine. 2021 Apr 1;131:104253
- **Li, J.,** Li, W., Gertych, A., Knudsen, B.S., Speier, W. and Arnold, C.W., 2019. An attention-based multi-resolution model for prostate whole slide image classification and localization. CVPR 2019 Towards Causal, Explainable and Universal Medical Visual Diagnosis (MVD) Workshop
- **Wang, Z.*, Li, J***., Pan, Z., Li, W., Sisk A., Ye H., Speier, W. and Arnold, C.W., 2021. Hierarchical graph pathomic network for progression free survival prediction. MICCAI 2021 (In press. Early acceptance)
- Li, W., Wang, Z., **Li, J.,** Polson, J., Speier, W. and Arnold, C.W., 2019, May. Semi-supervised learning based on generative adversarial network: a comparison between good GAN and bad GAN approach. In CVPR Workshops
- Ebrahimpour, M.K., **Li, J.,** Yu, Y.Y., Reesee, J., Moghtaderi, A., Yang, M.H. and Noelle, D.C., 2019, January. Ventral-dorsal neural networks: object detection via selective attention. In 2019 IEEE Winter Conference on Applications of Computer Vision (WACV) (pp. 986-994). IEEE
- Li, W., **Li, J.,** Sarma, K.V., Ho, K.C., Shen, S., Knudsen, B.S., Gertych, A. and Arnold, C.W., 2018. Path R-CNN for prostate cancer diagnosis and gleason grading of histological images. IEEE transactions on medical imaging, 38(4), pp.945-954
- Li, W., Wang, Z., Yue, Y., **Li, J.,** Speier, W., Zhou, M. and Arnold, C.W., 2020. Semi-supervised learning using adversarial training with good and bad samples. Machine Vision and Applications, 31(6), pp.1-11
- Wang, M., **Li, J.,** Chen, L., Huang, Y., Zhou, Q., Che, L. and Shang, H., 2015. The study of the compatibility rules of traditional Chinese medicine based on apriori and HMETIS hypergraph partitioning algorithm. In Biomedical Data Management and Graph Online Querying (pp. 16-31). Springer, Cham

PATENTS

- **Li, J.**, Ebrahimpour, M.K., Moghtaderi, A. and Yu, Y.Y., Ancestry Com Operations Inc 019404 019404, 2020. Image captioning with weakly-supervised attention penalty. U.S. Patent Application 16/596,063
- Ebrahimpour, M.K., Yu, Y.Y., **Li, J.,** Reese, J. and Moghtaderi, A., Ancestry com Inc, 2020. Ventral-dorsal neural networks: object detection via selective attention. U.S. Patent 10,796,152
- Arnold, C.W., **Li, J.**, Speier, W., Li, W., Multi-resolution model with attention for attention for whole slide image analysis trained using weak labels. Pending application No. 62/852,625
- Li, W., **Li, J.**, Arnold, C.W., Speier, W., Path R-CNN for prostate cancer diagnosis and Gleason grading of histological images. Pending application No. 62/913,256